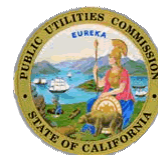


**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



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Order Instituting Rulemaking to Continue  
Implementation and Administration, and  
Consider Further Development, of California  
Renewables Portfolio Standard Program.

Rulemaking 18-07-003  
(Filed July 12, 2018)

**FINAL 2021 RENEWABLES PORTFOLIO STANDARD PROCUREMENT PLAN OF  
VALLEY CLEAN ENERGY ALLIANCE**

**PUBLIC VERSION**

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Dated February 17, 2022

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**PUBLIC VERSION**

**I. INTRODUCTION**

In accordance with Public Utilities (“Pub. Util.”) Code § 399.13(a)(5), the California Public Utilities Commission’s (“Commission”) Decision (“D.”) 19-12-042 and D.21-01-005, respectively, on 2019 and 2020 Renewables Portfolio Standard Procurement Plans, the Assigned Commissioner and Assigned Administrative Law Judges’ Ruling Identifying Issues and Schedule of Review for 2021 Renewables Portfolio Standard Procurement Plans (“ACR”), and the Commission’s Decision on 2021 Renewables Portfolio Standard Procurement Plans (D.22-01-004), Valley Clean Energy Alliance (“Valley Clean Energy” or “VCE”) hereby submits this Final 2021 Renewables Portfolio Standard Procurement Plan (“RPS Procurement Plan” or “Plan”).

**A. Background**

VCE was formed as a Joint Powers Authority (“JPA”) of the City of Davis and County of Yolo in 2016. The City of Woodland joined the JPA in June 2017, and the City of Winters joined in 2021. The members formed VCE for the purposes of implementing a community choice aggregation (“CCA”)/Community Choice Energy (“CCE”) program to allow VCE to provide electric generation service within their respective jurisdictions. VCE initiated customer service on June 1, 2018. As of February 15, 2022, VCE is serving approximately 62,000 customer accounts, which are expected to have a retail load of 762,340 megawatt-hours (“MWh”) in 2021. VCE has contracted with Sacramento Municipal Utility District as its wholesale energy services provider to procure energy resources on its behalf including those necessary to satisfy RPS and discretionary renewable energy requirements for its beginning years of operation. VCE filed its Final 2020 RPS

Procurement Plan on February 19, 2021. In accordance with D.22-01-004, VCE is filing this Final 2021 RPS Procurement Plan.

## **II. RPS PROCUREMENT PLAN**

### **I. Summary of RPS Major Changes (ACR § 5.1)**

As compared to its Final 2020 RPS Procurement Plan, VCE's Final 2021 RPS Procurement Plan has been updated to include a description of recent customer expansions. In 2020, VCE extended service to net energy metering ("NEM") customers in the original service territory. In 2021, VCE expanded its service territory to include the City of Winters. The Final 2021 Plan discusses VCE joining the California Community Choice Power ("CC Power") JPA in April 2021. CC Power is focused on acquisition of energy, capacity, storage or other energy products on a scale that the individual members most likely would not be able to achieve on their own. The Plan also provides updated additional analysis of VCE's renewables resource portfolio, and compliance with all new requirements articulated in the ACR.

### **II. Executive Summary – Key Issues (ACR § 5.2)**

The 2021 RPS Procurement Plan discusses VCE's planning process to evaluate its current and future net renewable positions and demonstrates that VCE is well positioned to meet or exceed all RPS requirements in the current RPS Compliance Period 4 (2021-2024), as well as in RPS Compliance Period 5 (2025-2027) and beyond. The Plan describes the assumptions used by VCE in forecasting demand and supply. It applies lessons learned internally and from other retail sellers and market players. Observed trends and regulatory changes are incorporated into the Plan. These all help to determine the next procurement steps VCE plans to take in order to meet RPS requirements and VCE-established targets.

VCE recently increased its customer base through two expansions. As described in Valley Clean Energy Alliance Addendum No. 1 to the Community Choice Aggregation Implementation Plan and Statement of Intent, VCEA program expansion Phase 1b included the enrollment of the Net Energy Metered ("NEM") customers in VCE's original service territory during January through December of 2020. As described in program expansion Phase 2, VCE expanded its service territory to the City of Winters in 2021. It enrolled non-NEM customers in Winters in January 2021 and

enrolled NEM customers in January through December 2021 based on customer true-up periods. These expansions are included in VCE's load forecast and RPS planning assumptions.

VCE has completed its first two renewables solicitations, launched in 2018 and 2020. As a result of these solicitations, four new-build renewable resources, three of which include battery energy storage systems ("BESS"), will be added to the power supply portfolio. The output from these resources is expected to meet most of VCE's RPS requirements for current and future compliance periods. See Table 1 below for the commercial operation date ("COD") and capacity for the four PPAs that resulted from the 2018 and 2020 solicitations.

**Table 1: Long Term PPAs**

<b>Long Term PPAs</b>	<b>Actual or Expected COD</b>	<b>Capacity</b>
Resurgence Solar I	12/31/2022	90 MW PV, 75 MW BESS
Aquamarine Solar	9/22/2021	50 MW PV
Putah Creek Energy Farm	7/1/2022	3 MW PV, 3 MW BESS
Gibson Solar	3/31/2023	20 MW PV, 6.5 MW BESS

VCE's current analysis indicates that Compliance Period 4 and 6 will likely require additional renewables procurement that can come from short-term or long-term contracts (see RNS Template, Appendix B). VCE's desire is to fulfill these future requirements with new-build resources; however, VCE's plans will adapt to changes in the renewable energy market, customer preferences, and economic conditions.

Many lessons learned have been incorporated in the planning process. Of key significance is the integration of the relationship between RPS goals and reliability. As such, many of the changes in VCE's approach to RPS procurement planning revolve around how resources complement overall grid reliability and stable energy markets. Specifically, VCE is procuring new renewable energy resources paired with BESS, shown in Table 1, which provide additional resource adequacy benefits that will help meet California's net peak load while complementing VCE's procurement outside of meeting RPS goals, which includes demand response and stand-alone BESS resources. There is also an increased emphasis on maintaining flexibility in the portfolio to deal with unexpected changes in trends, markets, and policy. As important as it is to be aware of the

procurement needs over a long-term horizon, it is equally important to not over-commit in the short-term. These lessons learned play an important part in meeting RPS goals while maximizing customer value.

The focus of VCE's 2021 RPS Procurement Plan is to ensure that long-term and short-term goals of the RPS program and VCE are both met with certainty. Potential risks have been identified and methods to manage these risks are discussed. Next steps in the procurement process are described.

### **III. Compliance with Recent Legislative Impact on Regulatory Changes (ACR § 5.3)**

VCE is not only poised to meet or exceed its current and near-term RPS compliance obligations, but is also planning for and taking action to meet later RPS compliance period obligations, as well as California's ambitious 100% clean electricity by 2045 target, as specified in SB 100. VCE is also planning for and taking action to meet its required procurement for incremental capacity pursuant to Commission orders in the Integrated Resource Planning proceedings.

VCE's renewable percentage for its first three years of operation (2018-2020) was over 45% of retail sales. This exceeds the Compliance Period 3 RPS Procurement Quantity Requirement ("PQR") of 31% by more than 14 percentage points.

VCE is internally targeting a baseline of at least 42% renewables in procurement planning for Compliance Period 4, as compared to the 40% renewables PQR required using the straight-line method from D.11-12-020 and D.19-06-023. With the current resources under contract and risk-adjusted forecasts of load and supply, VCE estimates it will only need to procure an additional 98,000 MWh of renewables to meet its PQR for Compliance Period 4 under SB 100. VCE has also built in 84,000 MWh in Voluntary Margin of Overprocurement ("VMOP") to account for potential load volatility. This additional purchase can be met with short-term renewable energy credit ("REC") purchases over the next 3 years as VCE's percentage of RECs from long-term contracts is anticipated to be over 79% in Compliance Period 4. There is the possibility that the three projects under development under VCE's long-term renewables contracts come online before the guaranteed CODs used in the RNS template and planning process, which would increase expected volumes between 2022 and 2023.

Moreover, with the signing of four long-term renewable contracts in 2020 and 2021, VCE will comfortably exceed the 65% long-term RPS contracting requirement of SB 350. This is

demonstrated in the RNS template as most of the quantities in Row 13, “Risk-Adjusted RECs from Online Generation (MWh),” and all quantities in Row 15, “Risk-adjusted RECs from RPS Facilities in Development” are from VCE’s four long-term contracts, which represent 79%, 104%, and 83% of “Net RPS Procurement Need (MWh)” for Compliance Periods 4, 5 and 6, respectively. The execution of three of these contracts in 2020 also complies with the D.12-06-038 requirement that a new retail seller must execute a long-term contract in its first compliance period of operation for a minimum quantity of at least 0.25% of retail sales in its first year of operation. VCE’s retail sales in its first year of operation, 2018, were 394,935 MWh. The 0.25% requirement of 987 MWh is surpassed by the three long-term contracts executed in 2020.

VCE will address the current projected shortfall in Compliance Period 4 through short-term RPS contracts. The projected shortfall in Compliance Period 6 will be addressed through additional RFOs or short-term contract purchases, depending on project risks, the expected energy costs, and preference of VCE’s customers.

With respect to proposed legislation, VCE has formally supported Senate Bill (“SB”) 612 (Portantino). SB 612 would require the Commission to require electric investor-owned utilities (“IOUs”) to offer CCAs and electric service providers (“ESPs”) an allocation of legacy electrical resources for which departing load customers bear cost responsibility, including electric resources procured for RPS compliance. SB 612 would also require the Commission to “recognize and account for the value of all products in the electrical corporation’s legacy resource portfolio in determining the nonbypassable charge to be paid by the bundled and departing load customers to recover the costs of legacy resources.”

VCE has also supported SB 99 (Dodd), which would create a grant program administered by the California Energy Commission for local governments, CCAs and regional energy collaboratives to develop community energy resilience plans and expedite permit review of distributed energy resources. SB 99 would also require a public utility, as defined, to share information identifying critical facilities and areas most likely to experience a loss of electricity with the entity preparing a community energy resilience plan.

VCE has also supported Assembly Bill (“AB”) 843 (Aguiar-Curry). AB 843 authorizes CCAs to voluntarily bring contracts to the CPUC for bioenergy projects procured via the BioMAT feed-in-

tariff. The bill would clarify that CCAs are eligible to retain the RPS and RA benefits of the energy procured under this section.

In July 2021, VCE met with the Yolo County Planning Commission to discuss issues around balancing land use and new local renewable development.

#### **IV. Assessment of RPS Portfolio Supplies and Demand - §§ 399.13(a)(6)(A), 399.13(b), Compliance to D.17-06-026 Implementing SB 350's Requirement for Long-term Procurement (ACR § 5.4)**

##### **IV.A. Portfolio Supply and Demand**

###### **Assessment of Demand**

VCE's RPS planning process begins with demand by refining retail sales forecasts through 2030. Forecasts are based on 5 years of historical data, then compiled with assumptions for future economic growth, customer opt-ins/opt-outs, usage trends, energy efficiency, and policy implications. The load forecasts used in the RNS template incorporate the most up to date assumptions (as discussed in Section 8) and are weather normalized for future years. VCE only considers projects that are deliverable into the CAISO and that can demonstrate Full Capacity Deliverability in accordance with the CAISO tariff. Please see Sections 4.A.1 and 4.C below for a description of VCE's approach to considering deliverability characteristics and its load profile as part of its procurement process.

###### **Assessment of Supply**

Forecasts for supply begin with an assessment of current projects under contract with procurement for all years through 2030 in mind. VCE's executed RPS contracts and how the contracted volumes compare to VCE's forecasted load are shown in Tables 2 and 3 below, respectively.



**Table 2: Summary of VCE's Executed RPS Contracts**

<b>RPS Contract</b>	<b>Tech.</b>	<b>Capacity</b>	<b>Actual or Expected COD</b>	<b>Term</b>	<b>Expected Annual Output (degradation and battery round trip efficiency built-in)</b>
Aquamarine	Solar	50 MW	9/22/2021	15 Years	130,071 MWh
Resurgence Solar I	Solar + Storage	90 MW PV, 75 MW BESS	12/31/2022	20 Years	254,640 MWh
Indian Valley	Small Hydro	2.9 MW	Online	5 Years	6,448 MWh
Putah Creek Energy Farm	Solar + Storage	3 MW PV, 3 MW BESS	7/1/2022	20 Years	6,649 MWh
Gibson Solar	Solar + Storage	20 MW PV, 6.5 MW BESS	3/31/2023	20 Years	50,902 MWh

**Table 3: Summary of Executed RPS Contract Volumes vs. Forecasted Load**

Average Annual Load (2021-2030)	768,676 MWh
Average Total Expected Annual Output	353,721 MWh
Average Renewables %	46.0%

As discussed in more detail in Section 7 below, VCE assesses the risk associated with the amount of production from such facilities based on “P50” assumptions (where 50% of possible output scenarios exceed the assumption). The start date used for projects in development is based on the later of guaranteed COD or expected COD. The responses in Section 5 detail the projects under development incorporated in the planning process. The output of projects under development, as well as VCE’s online small hydro project and solar project, are used to calculate the net yearly positions. VCE chooses to use a more conservative guaranteed COD, rather than the contract expected COD date, to reflect the quantities in the RNS template for procurement planning purposes. Curtailment assumptions used in the assessment are based off the discussion in Section 13. There are challenges of forecasting curtailments for 10 years out with confidence in its reliability. Because of this, the assessment uses an average 5% assumed curtailment rate across all 10 years for the PV-only project. Curtailment assumptions start at 2% in the first two years based on an analysis of recent negative pricing events at the PV project’s pnode, and increase over time based on an assumption of increasing renewable penetration and therefore increasing negative

pricing events. The solar plus storage projects do not incorporate a curtailment assumption, due to the ability of the BESS to store excess generation during negative pricing events. Protection against curtailment was a key factor in VCE replacing its terminated solar PPA with a solar plus storage PPA, as described in more detail in Section 10 below.

Curtailment of existing resources is not a significant risk to VCE's RPS compliance going forward since the majority of renewable energy VCE plans to use to meet its RPS obligations will be from the aforementioned contracted projects under development rather than existing resources, as demonstrated in the RNS template by comparing the quantity of Risk-Adjusted RECs from Online Generation (MWh) in Compliance Period 3 of approximately 789,000 MWh to the forecasted quantity for Compliance Period 4, which drops to approximately 511,000 MWh, and to smaller quantities in later Compliance Periods.

With these assumptions, the resources currently under contract will achieve a power mix that is 37% renewable for Compliance Period 4, 54% for Compliance Period 5, and 50% for Compliance Period 6. Thus, VCE will require minimal additional REC volumes (approximately 6% of its load) to meet RPS requirements for Compliance Period 4, as demonstrated in VCE's RNS template (Appendix B) that shows VCE's Annual Net RPS Position after Bank Optimization (MWh) will be approximately 182,000 MWh short relative to Total Retail Sales of approximately 2,975,779 MWh over Compliance Period 4. Under these same assumptions for Compliance Period 4, over 79% of VCE's RECs will come from long-term contracts of at least 10 years, exceeding the 65% long-term contract requirement.

### **Procurement Implications and Strategy**

Due to the possible variability in the assumptions, VCE's strategy will be to monitor the development and status of its projects on a monthly basis and adjust incremental purchases as needed from either short-term or long-term contracts. This is appropriate since 2021 is the beginning of Compliance Period 4 and allows for time to react to deviation from the assumptions. VCE is also prepared to procure additional resources to ensure it meets the 65% long-term contract requirement through future RFOs or bilateral negotiations should its current projects fail to deliver. VCE has demonstrated its ability to quickly replace projects when needed through its efficient procurement of the Resurgence Solar I project. Additional risk assessment details and mitigation strategies are discussed in Section 7.

For future Compliance Period 6, VCE will need additional purchases of approximately 10% of its retail sales to meet RPS requirements. Percentages of renewable energy purchases for Compliance Period 6 will exceed the 65% long-term contract requirement without additional long-term commitments. However, VCE's general preference is to procure new-build resources to meet the remaining quantities identified in the RNS template. VCE also has goals of more ambitious renewable energy percentages than the RPS program itself. Procurement decisions around these considerations will depend on economics, risk assessment, and preference of VCE's customers.

As VCE's supply portfolio is increasingly developed, choices regarding the technologies and operating characteristics of each incremental resource become more critical. VCE is interested in resources that add dispatchability, diversification, and operational flexibility, and will place an emphasis on these characteristics in future procurement solicitations. VCE's commitment to these resource characteristics is demonstrated by its recent addition of three solar plus storage resources. Future solicitations may focus on such resources as demand response, wind, and/or additional energy storage. Although forecasted generation from current projects in development is expected to exceed the 65% long-term contract requirement in future compliance periods, VCE's preference is to fulfill the remaining RPS requirements with new-build resources as well. This will require additional solicitations in the future to fulfill the Compliance Period 6 requirement.

As a result of the demand and supply assessments, VCE's projected procurement actions for 2021 and the next 10 years are as follows:

- Monitor status reports on facilities in development on a monthly basis.
- Monitor actual retail sales vs. forecasts on a monthly basis.
- Revise long-term forecasts on an annual basis.
- Assess the need for additional RFOs on an annual basis.
  - Although additional solicitations have not been formally scheduled, VCE anticipates there will be at least one other formal RFO between 2023-2024 to address the ambitious renewable and carbon free goals of its customers.
- Purchase renewable energy under short-term contracts as needed to meet any small gaps in annual and compliance period targets.
- Maintain contact with potential suppliers of additional resources outside of the formal RFO process.

As discussed in Sections 6 and 7, VCE's greatest threat to meeting RPS goals is potential delays in development of new contracted projects. Procurement actions to address this risk include:

- Soliciting offers on an individual basis outside of the formal RFO process. VCE is following up on other short-listed offers that did not make the final list that have projected COD dates that align with portfolio needs. VCE is also contacting developers about projects that were not submitted during the formal RFO. These projects could reach execution either by an approved increase in renewable targets or development delay for existing contracts.
- Purchasing renewable energy under short-term contracts from existing facilities. VCE will use the sensitivity analysis discussed in Section 7 along with other considerations to determine the need and timing of additional purchases to maintain RPS targets. VCE's preference is to procure long-term, new-build resources, however, use of additional short-term contracts from existing facilities is an option should the conditions warrant.

#### **IV.A.1. Portfolio Optimization**

##### **Portfolio Optimization Goals & Strategies**

VCE's renewable resource portfolios will be optimized based on the following:

- 1) Procuring the optimal mix of generation resources that match the profile of load demand.
- 2) Developing a portfolio with resources of diverse technology types, geographic locations, and contract terms.

VCE believes a supply portfolio of resources that corresponds to its load profile minimizes exposure to energy markets, supports overall grid reliability and delivers the best value to customers. For time periods where a retail seller's demand is higher than its generation supply, the retail seller is exposed to purchasing energy on the spot market at unknown prices. For time periods where a retail seller's demand is lower than its generation supply, the retail seller is exposed to selling its supply on the spot market at unknown prices. Coordinating and aligning the supply with demand as best as possible across VCE's entire electric portfolio minimizes the time periods where VCE is forced to take a speculative position in the market. Since VCE's objective is to serve its customers with cost certainty, minimizing these time periods where an imbalance exists is a key objective to optimizing its portfolio.

Diversifying the power supply helps reduce overall risk. For example, a portfolio that only contains baseload generation such as biomass or geothermal may not address the fluctuations in hourly load that exists for VCE. For these hours where the supply and demand do not match, VCE would be purchasing or selling energy in the spot market to match its load. Adding peaking or dispatchable generation allows VCE to call on the additional energy when it is needed. Demand response or storage could be used to absorb excess supply during hours where generation exceeds load.

### **Solicitation Implications**

These portfolio optimization principles impact and drive VCE's RPS procurement plan. Thus, in future solicitations, VCE will be focused on procuring resources that have characteristics such as baseload, dispatchable, or load modifying capabilities. VCE's recent procurement actions demonstrate its commitment to resource dispatchability and resource adequacy, with three contracts signed in 2020 and 2021 that include battery storage. As discussed above, VCE will be determining the extent to which additional solicitations are needed in 2023-2024, and over the next 10 years. This could come from resources such as biomass, geothermal, additional battery storage, or aggregated demand response. These are the types of resources that VCE will be seeking to align power supply with its demand and load curve, and to diversify its portfolio.

In June 2020, 11 CCAs including VCE released a Joint Request for Information for long-duration storage resources.<sup>1</sup> Responses were due on July 1, 2020. Although the RFI did not result in any agreements, it did inform the CCAs that economies of scale and risk diversification are essential for (1) large scale projects and (2) emerging technology projects. As a result, numerous CCAs formed a JPA focused on the acquisition of energy, capacity, storage or other energy products on a scale that the individual members most likely would not be able to achieve on their own. The CC Power JPA includes VCE, CleanPowerSF, SVCE, 3CE, MCE, EBCE, PCE, SCP, San Jose Clean Energy, Redwood Coast Energy Authority. As an update from VCE's 2020 Plan, we note that VCE, along with CleanPowerSF, joined CC Power on April 21, 2021. Other CCAs may elect to join in the future, further increasing the buying power of CC Power. Through this membership, VCE joined the Joint CCA 2020 Request for Offers for Long Duration Energy Storage Capacity, issued on October 15, 2020. The solicitation process resulted in the selection of the Tumbleweed

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<sup>1</sup> The RFI materials are available here: <https://www.peninsulacleanenergy.com/current-rfp-rfo/rfi-long-duration-storage/>.

Energy Storage project, a 69 MW/552 MWh 8-hour duration lithium-ion battery project. The project is expected to come online in 2026. VCE's share is 2.86 MW / 22.88 MWh, which will fulfill part of its long-duration storage obligation. A second project, which will fulfill VCE's remaining obligation, was selected through the same RFO process. Contract negotiations are ongoing, with execution targeted in 2Q 2022. VCE is also participating in the 2021 Request for Offer for Firm Clean Energy Resources, released on October 25, 2021. CC Power is shortlisting projects in February and is targeting contract execution in the second half of 2022.

### **Mid-Term Reliability Procurement**

D.21-06-035 (Mid-Term Reliability Decision), adopted in the IRP rulemaking (R.20-05-003) in June 2021, established a procurement target of 11,500 MW of new net qualifying capacity (NQC) coming online in 2023-2026, all from zero-emitting generation resources and/or energy storage, including RPS-eligible resources. The Mid-Term Reliability Decision includes specific requirements for (1) RPS or zero-emitting resources coming online in 2023-2025, a subset of which must be met by resources designed to replace Diablo Canyon by being available 5-10 p.m. daily, during which time period they must deliver 5 MWh per 1 MW of capacity; (2) long-duration storage; and (3) zero-emitting generating resources with a capacity factor of at least 80% that is not weather-dependent.

VCE's procurement responsibilities under the Mid-Term Reliability Decision, and a summary explanation of how it is currently planning to achieve compliance with each, are identified in the following table. Overall, the Mid-Term Reliability Decision did not significantly impact VCE's RPS Planning for the 2023-2025, but it does result in an acceleration in the timing in which VCE plans to procure clean firm resources, now required by 2026. VCE's obligations for the first category of resources—RPS eligible or zero-emitting resources coming online in 2023-2025—will be fulfilled by its Resurgence Solar long-term PPA, which was already reflected in VCE's quantitative assessment as part of its draft 2021 RPS Procurement Plan. Also of relevance to VCE's RPS planning is the zero-emitting (80% capacity factor) requirement. As described above, VCE, as a member of CC Power, is participating in an RFO that solicited clean firm power resources such as geothermal and biomass that could ultimately fulfill VCE's obligations under D.21-06-035, although no decision has been made at this time. CC Power is shortlisting projects in February 2022 and is targeting contract execution in the second half of 2022. This resource category is not yet reflected in VCE's quantitative assessment in this RPS Plan. VCE intends to provide an update

on the status of this procurement, as well as quantitative assessment of the selected resource, in its draft 2022 RPS Procurement Plan.

**Table 4. Mid-Term Reliability Procurement**

	RPS eligible or Zero-Emitting			Diablo Replacement (Zero-Emitting)	Long-Duration Storage	Zero-Emitting (80% Capacity Factor)
Compliance Year	2023	2024	2025	2025	2026	2026
VCE Obligation (MW NQC) under D.21-06-035	8	23	6	10	4	4
VCE's Planned Method of Compliance	Resurgence Solar 1 Long-Term PPA	Resurgence Solar 1 Long-Term PPA	Resurgence Solar 1 Long-Term PPA	VCE analyzing approach to fulfill	REV Renewables Agreement + second contract under negotiation (Long-Duration Storage RFO by CC Power) <sup>2</sup>	October 2021 RFO issued by CC Power for Firm Clean Resources <sup>3</sup>

#### **IV.B. RPS Plan Responsiveness to Local and Regional Policies**

In addition to meeting statutory RPS requirements, VCE has implemented higher internal renewable energy procurement targets based on its Board's goals. For example, while the RPS requirement for Compliance Period 4 is 39.9%, VCE's procurement plan has a renewable energy target of at least 42%. Although VCE is giving itself flexibility to accommodate changing economic conditions and Power Charge Indifference Adjustment ("PCIA") fluctuations, it is expected that this internal target will increase. These higher targets will develop as more certainty is derived from its influencing factors. They will be met with additional purchases from future solicitations. VCE's commitment to fully source RPS requirements at an early stage is demonstrated by its procurement of 53.8% renewable energy in Compliance Period 5, 4.4 percentage points above the target of 49.4%. As shown in the RNS template (Appendix B), VCE has already entered into RPS contracts for existing resources and resources under development that will allow it to achieve 37% renewable energy for Compliance Period 4, indicating only

<sup>2</sup> <https://www.solarpowerworldonline.com/2022/01/7-california-ccas-sign-on-for-nearly-70-mw-long-duration-energy-storage-project/>

<sup>3</sup> <https://cal-cca.org/california-community-power-releases-request-for-offers-seeking-200-mw-of-firm-clean-resources/>

minimal amounts of additional short-term renewable energy purchases will be needed to meet VCE’s internal goal of 42% renewable energy over the 2021-2024 period.

VCE’s procurement strategy is also helping to implement Yolo County’s Climate Action Plan (“CAP”) that was adopted by the Yolo County Board of Supervisors in March 2011 by procuring renewable, greenhouse gas- (“GHG”) free resources well above state-mandated requirements.<sup>4</sup> To meet the County’s climate goals, the CAP’s Action Plan specifically recommended establishing a community choice aggregation program, which was fulfilled by the launch of VCE in 2018. Additionally, VCE’s recently adopted Strategic Plan (November 2020), includes objectives to engage and assist with implementation of its member jurisdictions’ climate strategies. As one example, VCE senior management staff are serving on the Technical Advisory Committee for the City of Davis’ Climate Action and Adaptation Plan update. As of February 2022, the workshops have concluded and the City of Davis is currently drafting a final plan. In addition, Yolo County has formed a sustainability commission appointed by board of supervisors, and VCE are contributors and serve in an advisory role on energy related issues.

#### **IV.B.1. Long-term Procurement**

VCE has executed four long-term RPS contracts, as shown in Table 4.

**Table 5. Long Term PPAs**

<b>Long Term PPAs</b>	<b>Contract Execution Date</b>	<b>Expected COD</b>	<b>Terms</b>	<b>Capacity</b>
Resurgence Solar I	1/21/2021	12/31/2022	20 years	90 MW PV, 75 MW BESS
Aquamarine Solar	2/14/2020	9/22/2021	15 years	50 MW PV
Putah Creek Energy Farm	11/13/2020	7/1/2022	20 years	3 MW PV, 3 MW BESS
Gibson Solar	11/13/2020	3/31/2023	20 years	20 MW PV, 6.5 MW BESS

As noted, these contracts are expected to begin deliveries between 2021 and 2023. These four long-term renewable contracts will enable VCE to comfortably exceed the 65% long-term requirement of SB 350. This is demonstrated in the RNS template as all quantities in Row 15, “Risk-adjusted RECs from RPS Facilities in Development” are from these four contracts, as well

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<sup>4</sup> <https://www.yolocounty.org/community-services/planning-public-works/planning-division/climate-action-plan>.



as most of the quantities in Row 13, Risk-Adjusted RECs from Online Generation (MWh), which together represent 79%, 104%, and 83% of “Net RPS Procurement Need (MWh)” for Compliance Periods 4, 5 and 6, respectively. The execution of three of these contracts in 2020 by VCE also complied with the D.12-06-038 requirement that a new retail seller must execute a long-term contract in its first compliance period of operation for a minimum quantity of at least 0.25% of retail sales in its first year of operation. VCE’s retail sales in its first year of operation, 2018, were 394,935 MWh. The 0.25% requirement of 987 MWh is surpassed by the three long-term contracts executed in 2020.

The risk for project delays has been incorporated into RPS Planning and is discussed in Section 7. Over the next 10 years, as it looks to future Compliance Period 6, VCE will need additional purchases of approximately 10% of its retail sales to meet RPS requirements. Percentages of renewable energy purchases for Compliance Period 6 will exceed the 65% long-term contract requirement without additional long-term commitments. However, VCE’s general preference is to procure new-build resources to meet the remaining quantities identified in the RNS template. VCE also has goals of more ambitious renewable energy percentages than the RPS program itself. These goals also help to mitigate risk of project delays or failure from contracted resources. Procurement decisions around these considerations over the next 10 years will depend on economics, risk-assessment, and preference of VCE’s customers.

#### **IV.C. Portfolio Diversity and Reliability**

VCE’s procurement decisions assess and take into account the diversity of the resources within its portfolio, including resource types and deliverability characteristics. Portfolio diversity and reliability are key considerations in VCE’s portfolio optimization as described in Section 4.A.1. Creating a power supply portfolio that aligns with VCE’s load curve complements overall system needs and minimizes imbalance issues. The more VCE’s supply aligns with its demand, the less it relies on the grid to supply energy during shortfalls or absorb energy when there is excess. This minimizes the amount and frequency of “leaning” on other retail sellers. VCE’s recent procurement and future solicitations over the next 10 years are focused on resources with load-aligned generation profiles and dispatchability characteristics to achieve this.

Targeting a diverse portfolio of resources adds flexibility to the grid. Dispatchability, curtailment options, and unique generation profiles are key characteristics on which VCE will focus in future

solicitations. This strategy has the double benefit of decreased risk for VCE customers and supporting grid reliability. For example, demand response has the benefits of reducing the need for transmission upgrades and accommodating contingencies on the grid. Storage technologies can increase the accommodation of existing renewable penetration and reduce the amount of curtailments, thereby reducing under-utilization of existing renewable resources. Investing in resources closer to load pockets reduces burden on high voltage transmission lines, which reduces the risk of wildfires. This procurement strategy also results in lower congestion and transmission loss costs for the energy portfolio. These are all important elements in VCE's future solicitations. These qualities help maximize value to VCE customers, promote grid reliability, and enhance the well-being of all communities across California.

In addition to the considerations described above, VCE recognizes electrification will increase load over the next 10 years. VCE has incorporated transportation electrification assumptions into its long-range load forecasting process. VCE's assumptions align with the California Air Resources Board, 2017 Climate Change Scoping Plan, which identified a statewide target of 5 million electric vehicles on the road in order to meet 2030 carbon emission reduction goals. To convert that goal into an EV forecast, VCE developed an adoption curve for statewide EV counts from 2010 and prorated the statewide adoption curve to its territory based on population. To establish a load impact, EV counts were applied to EV charging curves developed by NREL, as published in the California Energy Commission's report on plug-in electric vehicle charging infrastructure. VCE's baseline forecast assumes total additional annual load from EVs to be 50 GWh by 2030. VCE will monitor actual transportation electrification over time. If the adoption is faster than forecast, VCE will procure additional short-term RPS contracts as needed to maintain portfolio targets. Long-term assumptions will be recalibrated to determine any need for additional long-term RPS contracts. Transportation electrification increases load shape uncertainty, based on the time of day that customers charge their vehicles. As described above, VCE's future portfolio growth will focus on resource diversity to reliably serve VCE customers and contribute to the reliability of the California grid. Additionally, VCE will explore rate design that incentivizes charging at times of day that improve load shape and optimize fit with VCE's portfolio of resources.

Part of VCE's 2021 RPS Procurement Plan is to maintain some flexibility in its portfolio through 2030. This strategy is intended to accommodate the integration of future resources that may have

operating characteristics that differ from those of existing technologies. For the near term, battery storage is an example of what makes sense as an addition to VCE's portfolio. As discussed above, three of VCE's four long-term renewables contracts greater than 10 years in length include battery storage. It is important to be aware of how prices might evolve over time, however, to ensure the supply portfolio is not dragged down by expensive resources. Flexibility is also important because of unanticipated trends or events. Transportation electrification is expected to alter energy usage. Since VCE is seeking to procure renewable resources that will align with its load profile in its recent and future solicitations, trends in transportation electrification are accounted for in its RPS procurement planning process.

VCE is open to all resource types, including emerging and hybrid technologies. The adoption of newer technologies into VCE's power supply will depend on how such resources complement the portfolio and the costs associated with these resources. Emerging technologies tend to be more expensive and potentially pose unknown risks that need to be understood and examined further before VCE deems it prudent to commit too much of its small portfolio to them.

Events such as the COVID-19 pandemic could have a wide range of impacts on economic conditions and demand patterns in the coming years. Maintaining flexibility in VCE's portfolio is important to manage costs, risks, and unexpected changes. For these reasons, VCE is choosing to maintain some open positions for future compliance periods.

To address new resource development risks, VCE attempts to diversify by signing multiple contracts for generation from smaller resources rather than one contract for a larger resource. VCE's ability to implement this strategy is somewhat limited by the size of its load and the lack of economies of scale associated with smaller projects, including transactional efficiency.

VCE recognizes the benefits of coordinated procurement efforts with other retail sellers. These include economies of scale and transactional efficiency. They allow a participating retail seller to diversify its supply across more resources than it would if entering into a contract for a large resource on a bilateral basis. There are also benefits from a reliability perspective. The coordination means a more wholistic view is taken, which more closely matches the overall needs of the grid. VCE is a member, along with numerous other CCAs, of the CC Power JPA, which is focused on the acquisition of energy, capacity, storage or other energy products on a scale that the individual

members most likely would not be able to achieve on their own. Through CC Power, VCE is currently participating in a solicitation for long duration storage.

#### **IV.D. Lessons Learned**

VCE's experience with its first solicitation launched in 2018 and observation of trends and feedback from bidders has allowed it to refine its approach to RPS procurement planning. From its first solicitation, VCE has learned how to improve the streamlining of its RFO process. Through feedback from participants as well as self-evaluation, VCE plans on continually refining its solicitations. This includes timing, communications, selection criteria, and evaluation methodology.

For example, to improve the timing of launch, VCE learned that it is helpful to be aware of RFOs from other retail sellers that may have an impact on the quantity and quality of bids received. During the process, constant and updated communications as to where the retail seller is in the RFO process are appreciated by bidders. VCE has learned that clarifying next steps and expectations helps bidders understand where to focus their efforts. Engaging bidders and speeding up the short-listing process decreases the chance that bidders drop out or choose to enter into contracts with other buyers. VCE incorporated these lessons from its first solicitation and lessons from the marketplace into its 2020 solicitation, and will continue to refine its solicitation process going forward.

Another lesson VCE learned from its RPS procurement planning processes is the need for prudent risk assessment and risk management in addition to economic optimization. For example, flexibility in the portfolio is extremely important as RPS procurement planning assumptions for the future can change. This has been historically demonstrated through unanticipated regulatory changes, shifts in technology and energy markets, load departure, severe events such as wildfires, and the COVID-19 pandemic. Flexibility and optionality in the portfolio are valuable to mitigate the impact of these events. It is important for a retail seller like VCE to avoid committing too much of its portfolio for extended time periods, especially on newer technologies. The energy markets and cost of renewables can and will change in the future. Overcommitting to certain price points and technologies can drag a portfolio down for a long time by locking a retail seller into a specific portfolio and limiting its ability to react to market, policy, or economy-wide changes. This was evident historically for some retail sellers, as the cost of renewables came down considerably over

a relatively short period of time, yet such parties were stuck with higher-priced contracts. Having observed this, VCE has learned that it is prudent to approach the adoption of emerging technologies carefully and diversify investment in resources as much as possible. As such, VCE is approaching its long-term procurement planning with these elements in mind.

VCE has also observed a significant backlog in the CAISO interconnection process. With additional entities declaring carbon-free targets and procurement mandates likely to be instituted, the projects in the interconnection queue increasingly are obligated to other offtakers. To mitigate this issue, VCE has learned to begin planning for future procurements as early as possible.

#### **V. Project Development Status Update (§ 399.13(a)(6)(D)) (ACR § 5.5)**

As referenced above, and related to its initial solicitation for long-term renewable contract supply, VCE has executed four PPAs to procure 163 MW from four new-build solar PV facilities, attached to 84.5 MW of integrated battery storage. The CODs of these four projects range from 2021 to 2023, as set forth in Table 1 and the Project Development Status Update template. The RNS calculation in the quantitative information provided in Section 8 reflects all of these long-term renewable resources under contract. As demonstrated in the RNS template, the PPAs are forecasted to generate over 1 million RECs in Compliance Period 4, comprising approximately 79% of VCE's Net RPS Procurement Need for this time period. This leaves a net RPS need of approximately 98,000 MWh of additional renewable energy needed to achieve VCE's Compliance Period 4 Gross PQR, and 182,000 MWh to achieve its Compliance Period 4 Net RPS Procurement Need. The additional 84,000 MWh Voluntary Margin of Overprocurement above the Gross PQR is discussed in Section 8.

The contribution of these four projects will be significant in providing almost all of VCE's RPS requirements. All the quantities in Row 15 of the RNS template listed under "Risk-Adjusted RECs from RPS Facilities in development" come from these projects. Since the submittal of VCE's Draft 2021 RPS Procurement Plan, one of these projects has achieved commercial operation, and thus most of the quantities reflected in Row 13, Risk-Adjusted RECs from Online Generation (MWh), reflect this resource. It is critically important for VCE to monitor the development status of the remaining projects, as discussed in Sections 6 and 7. The current development status of the projects is discussed in the table below.

**Table 6. Development Status**

<b>Project</b>	<b>Original Expected Commercial Operation Date</b>	<b>Current Expected Commercial Operation Date</b>	<b>Project Development Status Update</b>
Aquamarine Solar	9/24/2021	9/22/2021	Operational. Successfully declared COD two days ahead of expected COD.
Putah Creek Energy Farm	10/15/2021	7/1/2022	Solar field is complete. COD is delayed due to supply chain issues impacting the BESS delivery. Once the battery is received at site, no further delays are anticipated.
Gibson Solar	3/31/2023	3/31/2023	Project is in the process of completing CEQA, which could impact COD, depending on results. PG&E System Impact Study (SIS) is behind schedule but close to completed, no declared impact to COD at this time. Once study results are received, developer will provide an update on any COD impact.
Resurgence Solar I	12/31/2022	12/31/2022	Project is on schedule with construction starting later in Q1 2022. An SCE transmission upgrade, which is a predecessor to interconnection, poses a small risk to COD. Developer is working diligently with SCE to maintain schedule. No change to COD anticipated at this time.

VCE expects to add additional renewable resources by 2026 or 2027. VCE’s 2020 Integrated Resource Plan (“IRP”) action plan calls for RFOs to be initiated in the 2023-2026 period to facilitate the addition of new renewable capacity in the 2026-2030 period.

Through this combination of recent and future procurement activity, VCE expects to be able to meet RPS requirements and GHG goals over the next decade. As a result, VCE does not currently anticipate needing to issue additional long-term renewable solicitations in the next two years to meet its RPS obligations, as its existing long-term renewable contracts and minor short-term procurement are expected to provide sufficient quantities of renewable energy to meet VCE’s overall PQR. Both the 0.25% long-term contracting requirement for Compliance Period 3 and the 65% long-term contracting requirement for Compliance Period 4 are fulfilled by VCE’s existing long-term renewable contracts.

The additional capacity that VCE plans to procure in future renewables solicitations will be RPS-eligible, and VCE has a preference for further diversifying its portfolio with different technologies from wind, bio-fuels, hybrid, and BESS based resources if those resources are available and are competitively priced. As the cost of BESS is expected to continue to decline, VCE also expects to continue to increase its use of BESS to meet its resource adequacy goals and to enhance the use of solar energy to extend beyond daylight hours.

## **VI. Potential Compliance Delays - § 399.13(a)(6)(B) (ACR § 5.6)**

Although failure to meet compliance obligation is not anticipated, VCE recognizes there are many risks that threaten compliance. VCE has identified the most relevant factors that could contribute to potential compliance delays, which has allowed VCE to examine and focus on mitigation measures to manage and reduce the likelihood of these factors impacting RPS compliance.

### **Load Uncertainty**

Because compliance obligations are based on retail sales, any deviations from expected load could have an impact on VCE's ability to meet these requirements. Therefore, having a robust load forecasting methodology is of high importance. VCE projects its load using five years of historical customer interval data for enrolled and enrolling customers. The historical data is weather-normalized and then adjusted for future years based on anticipated population, housing, and economic growth, as well as customer opt-in/opt-out trends. Growth in net energy-metered solar, behind-the-meter energy storage, and plug-in electric vehicle adoption further modify the load forecast. The forecast is updated annually at the beginning of the year to obtain the most recent and accurate assumptions. Unforeseen load deviations could result from weather, opt-in/opt-out rates, and events such as the COVID-19 pandemic.

When VCE conducted its initial assessment of the load impact of the COVID-19 pandemic, economic forecasts indicated significant load reduction could result from the closure of businesses and schools during stay-at-home orders, followed by a lasting load reduction resulting from an economic recession. Actual load data collected over the past year, along with updated economic forecasts, led VCE to update its load impact assumptions. Due to a combination of residential load increase offsetting commercial load reductions and a lower likelihood of lasting economic

recession in VCE's territory, the Final 2021 RPS Procurement Plan is being submitted with higher load actuals in 2020 and assumptions Compliance Period 4 than the 2020 RPS Procurement Plan.

VCE bases its annual procurement targets and strategy on the most likely load scenario using the best available information at the beginning of the year. VCE monitors actual load throughout the year, adjusting the load forecast when major changes are observed or anticipated. In addition to using an established load forecast as the base case for procurement targets, VCE also models other possible load scenarios under variable conditions to ensure it can meet its procurement targets over a variety of probable cases. Where it makes sense financially for VCE's customers and does not put VCE at additional economic risk, VCE will over-procure to ensure it still meets its obligations under various probable scenarios.

Due to the automatic opt-in nature of CCA programs, VCE faces more exposure to downside risk in its load forecasting than it does to under-forecasting. VCE has a relatively low opt-out rate, hence it uses a higher initial starting point for the load forecast to drive procurement targets. Therefore, VCE's compliance metric is more likely to be impacted by load drop from opt-outs than it is from unexpected load growth. A decrease in load does not pose a risk to VCE's RPS compliance, since reducing load will, holding all other variables (such as quantity of renewables procurement) constant, result in a higher portion of VCE's retail sales coming from renewable energy.

To manage the risk of load loss from customer opt-outs, VCE utilizes enhanced customer relationship management and marketing. VCE incorporates load growth from service territory expansion into its Implementation Plan update process as well as the annual load forecast update, which allows load growth to be incorporated into its Plan in a timely manner. VCE feels comfortable that it has accounted properly for load variance effects on its ability to meet RPS compliance requirements through the following measures:

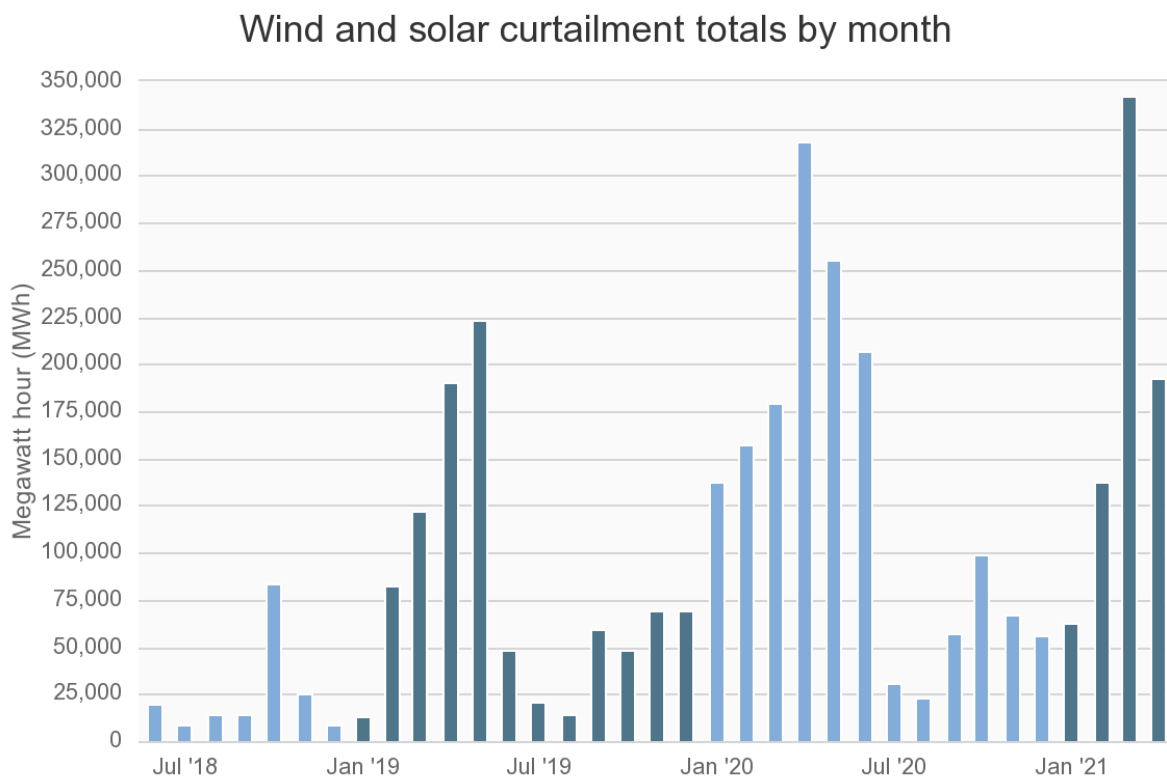
- 1) VCE accounts for a variety of load scenarios.
- 2) VCE continually monitors and adjusts its load forecast.
- 3) VCE has measures in place to manage some of its load deviation.
- 4) VCE is at more exposure to lower than expected load than it is to higher than expected load.
- 5) VCE procures above the RPS minimum requirements.



## Curtailment

The rising supply of non-dispatchable, minimal variable cost generation on the grid has led to an increasing trend of curtailments of these renewable resources in the CAISO as demonstrated in Figure 1 below.

**Figure 1. CAISO Wind and Solar Curtailment**



Source: <http://www.caiso.com/informed/Pages/ManagingOversupply.aspx>

VCE's RPS compliance can be put at risk if the resources from which it has procured renewable generation are curtailed. VCE has taken into consideration the potential for its renewable generation resources to be subject to these trends when planning its procurement. These trends are studied on an aggregate level using historical curtailment data from the CAISO. On an individual resource level, VCE studies historical and projected negative pricing events based on technology type, location, interconnection queue, and possible transmission constraints, before incorporating resources into its generation supply. Assumptions and projections of these trends are considered in the modeling of VCE's resource portfolio when assessing its ability to meet its renewables goals.

To help control these risks on an aggregate level, VCE along with other retail sellers, can promote load modification programs such as electric vehicle adoption, building electrification, demand response, time-of-use rates, and improved regional coordination in the energy markets. For example, VCE is working with a demand response partner to establish an agricultural demand response pilot program in VCE's territory. Additionally, VCE has incorporated energy storage technologies as part of its resource portfolio to mitigate potential renewable resource curtailment impacts. VCE incorporates curtailment clauses in its contracting of renewable resources to minimize exposure to extreme negative pricing events. These curtailment assumptions are built into its modeling when assessing its ability to meet renewables percentage targets and are accounted for in the RNS template.

### **Project Development Delays**

As with all new build resources, there is the potential for delay from numerous development-related risks. VCE attempts to minimize risks such as interconnection, permitting, and site control delays by being very selective in its solicitation process. For example, in its first two solicitations for long-term renewables, VCE chose to focus on and applied higher value to later stage, earlier-COD projects. VCE believes the selected projects reflect the best combination of many factors, with a heavy emphasis on the development stage to reduce the potential for delayed development.

The COVID-19 pandemic has been disruptive to the supply chain; however, it only impacted one of VCE's renewable project developments. VCE received official notice of delay on the Putah Creek Energy Farm project and Aquamarine project. The Aquamarine developer experienced a delay of start of construction, which had no impact to the guaranteed COD. Aquamarine achieved COD two days ahead of schedule. The Putah Creek Energy Farm project COD is delayed by approximately 8 months due to a delay in receiving the BESS. Putah Creek is proceeding with a path to energize the PV field, with hopes to energize in Q2, prior to energization of the BESS. Similar supply chain delays are not anticipated on VCE's other other contracts. Further disruption in the supply chain would be the most difficult to mitigate and represents the largest threat to VCE meeting its RPS requirements. VCE's suppliers are obligated to provide regular reports on development progress and potential issues. Other examples of such pandemic-caused risks include local building department permitting, interconnection certification, or transmission network upgrade delays. VCE's risk management approach includes using the guaranteed COD date to model expected volumes; therefore, this delay does not change the project's forecasted delivery

volume in Compliance Period 4. VCE is closely monitoring the status of all projects and working with its developers to stay on top of any potential issues in order to react accordingly.

VCE's objective is to contribute to California's renewables goals by contracting for new-build renewable resources. Should there be force majeure-level impacts to VCE's contracted-for projects under development, this could impact VCE's ability to meet its RPS requirements, since a large percentage of its long-term contract requirements and PQRs are expected to be met by these projects. Under extreme circumstances, VCE may consider additional purchases of renewable energy from existing resources or short-term RECs to supplement its power supply. As an update to its Final 2020 RPS Procurement Plan, VCE's 2021 RNS Template now shows 60,000 MWh RECs from Expiring RPS Contracts in 2021, which reflects short-term REC purchases that VCE made in 2021 to contribute towards its Compliance Period 4 obligations. VCE also maintains contact with many developers on an on-going basis should the need arise to contract for replacement projects. VCE has demonstrated its ability to move quickly on replacement procurement through the six-month contracting duration of the Resurgence Solar I project.

## **VII. Risk Assessment - § 399.13(a)(5)(F) (ACR § 5.7)**

VCE considers many factors in assessing risk in its RPS portfolio, including load variance, project development delays, supply chains, curtailment, supply/demand in the market and costs. In assessing risk, VCE takes into account lessons learned from other retail sellers over the history of the RPS program, as well as its own experience in procurement thus far. The most relevant risks are described in Section 6 above, along with respective mitigation strategies. Currently, no known or certain project risks such as transmission, permitting or financing are projected to stall the guaranteed COD for VCE's contracted-for facilities under development, with the exception of the Putah Creek Energy Farm delay described above. Development risks are more challenging to forecast, quantify and assess using a modeling approach. The impact of these risks tends to be more binary. VCE's assessment of development delay is discussed further in Section 9.B. under MMoP Scenarios. VCE's current approach to modeling of risks reflects its position as a newer retail seller with a less developed RPS portfolio.

### **Compliance Risk**

VCE incorporates multiple compliance risks through its use of a Project Viability Calculator (PVC). VCE's calculator is based largely on the Commission's PVC, with minor modifications

tailored to CCA procurement. Each project is rated on criteria including Technology, Developer Experience, Site Control, Permitting Status, and Interconnection Progress. The project's score on each criteria is multiplied by the weight assigned to the criteria to calculate an overall Risk Adjustment Score. The Risk Adjustment Score is multiplied by the project's expected quantities to across the entire contract term. By derating the expected quantities, VCE is incorporating the factors that contribute to compliance risk. VCE actively monitors development progress and maintains contingency plans to adapt where needed.

Using its risk analysis model, VCE determined the COD for all long-term projects under contract with VCE could be delayed until six months after the guaranteed COD date before VCE is at risk of not meeting its long-term requirement for Compliance Period 4 (2021-2024). To manage this risk, VCE is closely monitoring the development status of its contracted-for long-term projects under development. Depending on the type of delay that might be introduced, VCE plans on supplementing its portfolio with additional short-term purchases from existing renewable resources and, if necessary, long-term commitments as well.

Under scenarios where one of the two large projects under contract with VCE completely fails to deliver, VCE would need to execute a replacement long-term contract of larger size with deliveries before 2024 to maintain compliance with the 65% long-term contracting requirement. The quantity of deliveries required to meet the shortfall with these extreme cases range between 106,000 to 222,000 MWh for Compliance Period 4. The volumes depend on which, how much, and when the project failures could occur. VCE has not yet examined future compliance with the same level of detail as it has for Compliance Period 4. This is because there is more time to react, and expected volumes in later compliance periods would be impacted by any replacement procurement action taken in Compliance Period 4.

In response to the ACR's direction to retail sellers to include a discussion of resource availability risk,<sup>5</sup> VCE notes that its existing long-term contracts, which are currently for solar-only and solar plus storage resources, do not face this risk to the same degree as other renewable resources like hydro and biofuels. To the extent VCE relies on such resources in the future to meet its RPS compliance obligations, it will appropriately consider those risks at that time.

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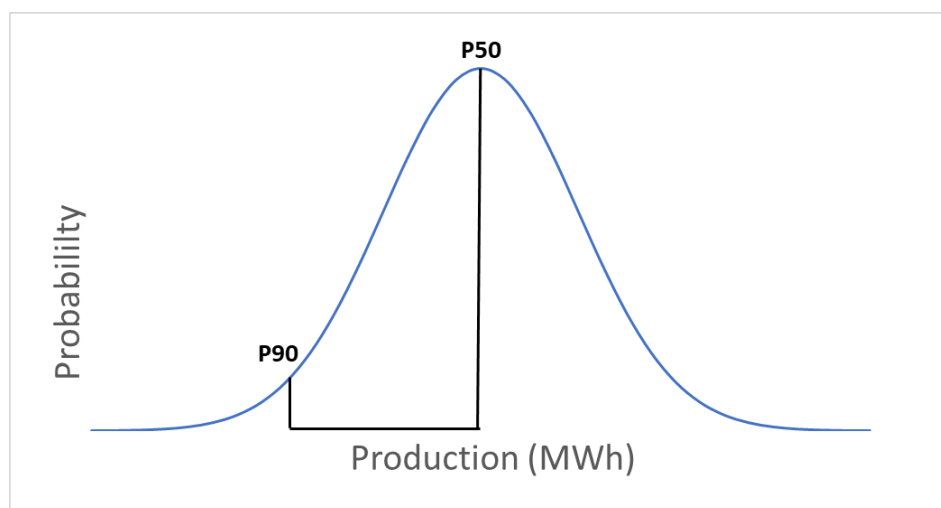
<sup>5</sup> ACR, p. 20.

## Risk Modeling and Risk Factors

VCE's portfolio of resources is not as developed as those of other more mature retail sellers. This provides the opportunity to optimize its portfolio from the ground up according to current market and regulatory dynamics, without the drag of possibly outdated assumptions and commitments. This also makes VCE relatively more susceptible to development risk than to variability in generation volume. As such, VCE is more concerned with risks that are somewhat more binary such as project failure and delayed COD.

If VCE's portfolio were more mature and closer to fully procured with online resources, a robust stochastic model incorporating multiple possible delivery scenarios within a statistical confidence interval would be more appropriate. To assess the energy yield of its unit contingent PPAs, VCE relies on the developer's studies and expectations. For assumptions in planning, VCE uses a range of "P90" to "P50" production exceedance scenarios. The P50 scenario represents the middle or best estimate of a facility's generation – i.e., there is a 50% chance production will exceed the estimate, and a 50% chance production will be below the estimate. The P90 scenario provides a more conservative estimate under which the facility's production is expected to exceed the estimate 90% of the time. These two estimates are illustrated in the normal distribution curve shown in Figure 2.

**Figure 2. Production Probability Curve**



Using the P50 to P90 production exceedance scenarios for risk assessment purposes represents a more conservative approach to the energy delivery estimates. VCE feels this is appropriate since VCE does not yet have long-term contracted resources that are already online and is more risk-

averse to under-delivery scenarios than it is to over-delivery. If VCE were targeting minimum RPS compliance obligations, it would be more suitable to use ultra conservative estimates closer to P90 scenarios in its planning to increase the likelihood of meeting the minimum requirements at the expense of over-procurement. Since VCE's targets are well above RPS minimums, the use of higher production assumptions ensures the risk of over-procurement is balanced along with under-procurement. This minimizes the possibility of unintentionally taking a longer position than planned.

Another consideration as to which production scenarios to use is the number of resources and technology types in the portfolio. For an organization that has multiple resources, using assumptions closer to P50 production makes more sense because of diversification benefits. In assessing its risk of meeting the RPS program and its own requirements, VCE strives to achieve a balance that has a high probability of meeting its targets without adding portfolio risk and higher costs to its customers. At this time, VCE feels using assumptions in the P90 to P50 range of production is suitable for its portfolio maturity. These assumptions will adapt according to how VCE's resource mix evolves over time.

To reduce the risk of under-delivery, VCE incorporates guaranteed energy production clauses in its long-term PPAs. This protects the integrity of the production studies that VCE relies on for planning purposes. Short-term contracts are mainly structured with defined and guaranteed quantity delivery and period.

VCE's ability to meet RPS requirements relies more on the certainty and timely development of its long-term renewable resources under development than it does on the variation of actual generation deliveries. Because of this, VCE chooses to focus more of its risk mitigation efforts on the potential impact of project development delays. VCE incorporates guaranteed COD clauses in its long term PPAs. Guaranteed CODs come with financial penalties for failure to achieve the COD, which make them more conservatively-estimated commitments. For planning purposes, VCE uses guaranteed CODs as the basis for its assumptions when assessing its risk of RPS compliance. As mentioned in Section 6, VCE also focuses more on and applies higher value to later-stage projects in its initial procurement efforts to minimize the risk of project delays.

With a focus on project development risk, VCE approaches its risk assessment by calculating its ability to meet RPS requirements under the worst-case scenario to understand when it must pursue alternative options to maintain compliance. For example, two of the projects with which VCE has contracted had COD dates in 2021. VCE uses models incorporating RNS methodologies to calculate the longest delay in COD it could tolerate before violating the 65% long term requirement required pursuant to Pub. Util. Code Section 399.13(b). In this scenario, contractually guaranteed volumes are used as assumptions for future deliveries instead of expected volumes.

VCE incorporates risks related to load uncertainty, as discussed in Section 6, by including a Voluntary Margin of Overprocurement that is 5% of the PQR. VCE monitors actual load throughout the year, adjusting the load forecast when major changes are observed or anticipated. In addition to using an established load forecast as the base case for procurement targets, VCE also models other possible load scenarios under variable conditions to ensure it can meet its procurement targets over a variety of probable cases. Where it makes sense financially for VCE's customers and does not put VCE at additional economic risk, VCE will over-procure to ensure it still meets its obligations under various probable scenarios.

### **System Reliability**

While VCE does not perform risk assessments on the grid itself, it relies on guidance from the Commission and studies from the CAISO to evaluate how overall system reliability should be factored into VCE's procurement planning. Based on this, VCE is aware of the need for resources other than stand-alone solar to address long-term concerns around effective load carrying capability ("ELCC") studies of renewables and the retirement of traditional resources such as natural gas and nuclear generation. While VCE's main focus is on maximizing value to its customers, it understands that reliability is critically linked to the RPS planning process. As described in more detail in Section 4, VCE contributes to overall system reliability by working to align its supply and demand as best as possible across its entire electric portfolio to minimize the time periods where VCE is forced to take a speculative position in the market. VCE will continue to evaluate additional resources, such as battery and long-duration energy storage technologies, as well as other types of renewable resources, such as baseload resources, to ensure a balanced portfolio that contributes to overall grid reliability. VCE's recent procurement of three storage-integrated resources, as well as its prior procurement from a small hydro project, demonstrates its commitment to procurement in a manner that is aligned with overall grid reliability. Portfolio

optimization, diversity, reliability and lessons learned as discussed in Section 4 all contribute to the shaping of VCE's risk assessment.

### **Lessons Learned**

VCE's lessons learned regarding risk management include both lessons that VCE has learned directly through procurement experience, and lessons that VCE has observed from other LSEs. VCE is particularly focused on lessons applicable to LSEs with a small physical footprint, and on how the increasing penetration of renewable generation impacts its overall procurement strategy.

#### Contingency Plans

Through experience, VCE has confirmed the importance of having contingency plans to address the potential risk scenarios incorporated in its modeling. It is equally important to have a strategy to address the risk as it is to recognize the risk. After one of the projects VCE had signed a PPA with was terminated, VCE quickly executed on its mitigation plan and pursued its replacement to avoid delay in meeting RPS requirements. The ability to respond quickly and adjust the procurement process was key to being effective at responding to such contingencies. Had VCE been required either internally or by regulatory requirements to follow a more rigid and formal protocol, VCE might not have been able to address this in a timely manner.

#### Diversification

Learned through the experience of other LSEs is the importance of having a diversified, risk managed approach to procurement. While VCE along with many other entities have ambitious renewable energy goals, it is prudent to balance that with avoiding putting VCE customers at risk of being stranded with long term commitments for resources that may become outdated or uneconomic. Larger and earlier adopters have had to bear this burden and pass these costs on to customers.

#### Coordination

As the mix of generation resources on the grid evolves, VCE has observed its impact on energy markets and operations. For example, the increase in solar has created issues related to the "duck curve" and serving the net peak, introducing new challenges to grid operations. As the market becomes more fragmented with load migration, it will be important to coordinate with other LSEs and have regulatory agencies provide higher level guidance to all LSEs in order to avoid



exacerbating these issues or creating new ones. All participants must work together to minimize adverse effects and ensure customers benefit collectively.

#### **VIII. Renewable Net Short Calculations - §§ 399.113(a)(5)(A), (D), and (F) (ACR § 5.8)**

To inform future procurement planning, the standard RNS template was used to calculate VCE's RNS position through 2030. The built-in methodologies in the RNS template were used with the following data assumptions:

- Retails Sales are based on the most current internal load forecasts.
- Guaranteed fixed delivery contracts were entered without any adjustments to failure rate.
- Quantities for Risk-Adjusted RECs from Online Generation are based on P50 scenarios, without further risk adjustment.
- Quantities for Risk-Adjusted RECs from Facilities in Development are based on P50 scenarios, then risk adjusted using a Project Viability Calculator. VCE's calculator is based largely on the Commission's Project Viability Calculator, with minor modifications tailored to CCA procurement. Each project's viability score is used to adjust expected quantities across the entire contract term. The Project Viability Calculator methodology is described in further detail below.
- Start dates for delivery from Facilities in Development are based on the later of the Guaranteed COD or Expected COD.
- Anticipated quantities for future solicitations are not incorporated.
- A two step Voluntary Margin of Overprocurement (VmoP) is included. For Compliance Period 4, the VmoP is in line with VCE's internal target to reach 42% of its electricity supply from eligible renewable energy sources, with a load volatility margin of 5% of the internal target. In later compliance periods, VCE's VmoP is calculated as 5% of the PQR, to account for potential variances in load.

**Table 7. Project Viability Calculator**

<b>Point Value</b>	<b>Technology</b>	<b>Developer Experience</b>	<b>Site Control</b>	<b>Permitting Status</b>	<b>Interconnection Progress</b>
100	Will use commercialized technology that is nearly identical to technology in use at a minimum of 2 operating facilities of similar or larger capacity	Developer has demonstrated experience developing renewable projects of similar size and technology	Full control of site/land <u>and</u> right of way for gen-tie line	Received permit from lead permitting agency and all other permits from secondary agencies	Project has posted 3 <sup>rd</sup> Interconnection Financial Security (IFS) at start of construction activities
90	Will use commercialized technology that is currently in use at a minimum of 2 operating facilities, but at first-of-its-kind scale	Developer has demonstrated experience developing renewable energy projects of similar size OR technology	Full control of site/land <u>or</u> right of way for gen-tie line	Received permit from lead permitting agency, but has not received secondary permits	Project has executed a GIA and posted 2 <sup>nd</sup> IFS
75	Project will use components of commercialized technology, but in an application that has not yet been commercially proven	Developer has demonstrated experience developing renewable energy projects	Partial control of site/land <u>or</u> right of way for gen-tie line	Filed for permits / under review by lead permitting agency	Developer has posted 1 <sup>st</sup> IFS and phase II study or equivalent study in progress
50	Technology is not commercially proven	Developer has no demonstrated experience developing energy projects	No control of site/land or right of way) for gen-tie line	Not filed for permits with lead permitting agency	Developer has submitted a interconnection request and phase I study or equivalent study in progress

Each project is assessed against the five criteria listed in Table 5 to determine its score in that category, with a score range between 50 and 100 out of 100. The category score is then multiplied by the weight of that criteria to develop a Risk Adjustment Score. See example Risk Adjustment Score in Table 6.

**Table 8. Example Risk Adjustment Score Calculation**

Criteria	Score	Weight	Weighted Score
Technology	100%	10%	10%
Developer Experience	75%	15%	11%
Site Control	100%	25%	25%
Permitting Status	75%	25%	19%
Interconnection Progress	50%	25%	13%
<b>Risk Adjustment Score</b>			<b>78%</b>

VCE appreciates the Commission’s direction that retail sellers use their internal risk analyses to make appropriate adjustments to their RPS procurement planning. This recognizes that each LSE is unique and that a generally applied risk-adjustment method is not as effective. For VCE, the use of P50 scenarios in its RNS calculations for expected deliveries, and application of the project viability score, represent a conservative expectation for risk-adjusted volumes. In addition, VCE’s adjustments to expected quantities include the following:

- Using the more conservative start dates for COD to account for potential development delay risk.
- Applying an escalating curtailment rate to VCE’s solar-only project, averaging 5% across the 10 year period.
- Reducing quantities for the solar plus storage projects by the battery round trip efficiency.

Analysis and mitigation strategy for further project delay or failure is discussed in Section 7.

RNS calculations currently show VCE will require minimal additional procurement in Compliance Periods 4 and 6 to meet minimum RPS requirements. These quantities are shown in the Annual Gross RPS Position row in the attached RNS template. If no delays occur to facilities still in development, these minimal quantities can be purchased as needed from short-term contracts of existing resources and the 65% long-term contracting requirement will still be met. All volumes from RPS facilities in development are from 10-year or longer contracts. Since quantities accounted for in the RNS template represent P50 scenarios multiplied by the project viability score, there is also the possibility that these minimal quantities end up being covered if actual generation exceeds the risk-adjusted generation forecasts.

The quantitative progress made towards RPS requirements is listed in the RNS template under “Annual Gross RPS Position.” This demonstrates VCE exceeded its PQR for Compliance Period 3 by approximately 243,000 MWh and is approximately 98,000 MWh shy of reaching its PQR for Compliance Period 4 and 171,000 MWh short for Compliance Period 6 with the current executed RPS contracts. For Compliance Period 4, the actual COD of the current projects in development will have an impact on the Gross RPS Position. VCE’s internal target is currently 42% renewables for Compliance Period 4 during this procurement planning period and will evolve as conditions warrant. With the MmoP discussed in Section 9 added to the RNS calculations, VCE is targeting the procurement of at least an additional 182,000 MWh to the current contracts for Compliance Period 4 and 240,000 MWh for Compliance Period 6.

In general, VCE’s approach to RPS procurement planning is to apply a relatively higher priority to action towards an identified need in the nearer term. The long-term planning horizon allows VCE to anticipate the need for additional procurement efforts in future years as well as recognize how procurements in the earlier time periods affect the future. While the planning horizon is for 10 or more years, VCE recognizes that the further out the time period, the more it is subject to deviation from forecasts. Unforeseen changes in policy, technology, and trends could alter procurement plans drastically. This is the reason why, as discussed in Section 4, maintaining portfolio flexibility is extremely important. Thus, the focus of VCE’s recent solicitations was mainly to address identified needs for Compliance Periods 4 and 5 based on RNS calculations and VCE’s internal targets. Procurement requirements for Compliance Period 6 will be addressed in future solicitations. These future solicitations will evolve and be influenced by updated forecasts and circumstances.

#### **IX. “Minimum Margin” of Procurement - § 399.13(a)(4)(D) (ACR § 5.9)**

VCE recognizes that retail sales do not always fall exactly in line with forecasts nor do renewable resources always deliver the exact quantities forecasted. As such, a minimum margin of over-procurement (“MmoP”) must be incorporated to ensure that RPS requirements are still met with a degree of certainty.

Historically, VCE has applied a volumetric cushion of 5% additional REC purchases on top of its already higher-than-RPS minimum internally-set requirements. This higher number was used to mitigate many of the uncertainties associated with the launch of a new CCA program. This resulted

in over-procurement of short-term, fixed quantity, RPS contracts for Compliance Period 3 as shown in the RNS template. For the 2021 RPS planning process, VCE is now in a different portfolio position due to its execution of four long-term projects currently under development that will be incorporated through the 10-year planning period.

Table 7 below shows the margin of RPS over-procurement based on the differential between the SB 100 and the VCE procurement targets.

**Table 9. Margin of RPS Over-Procurement**

<b>RPS Content Goals</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>
SB 100 RPS Target (as a percentage of retail sales)	35.8%	35.8%	41.3%	44.0%	46.7%	49.3%	52.0%	54.7%	57.3%	60.0%
VCE RPS VmoP (as a percentage of retail sales)	-22.6%	-19.3%	14.4%	38.9%	N/A	N/A	N/A	N/A	N/A	N/A
VCE RPS VmoP (as a percentage of PQR)	N/A	N/A	N/A	N/A	5%	5%	5%	5%	5%	5%
VCE RPS VmoP (MWh)	84,460				56,888			68,995		
VCE RPS MmoP (MWh)	0	72	20,642	21,998	21,826	21,715	21,605	26,694	26,482	26,345
VCE RPS MmoP (MWh)	32,559				65,146			64,213		

## **IX.A. Minimum Margin Methodology and Inputs**

As part of its MmoP methodology, VCE is incorporating safety margins into its renewable generation forecast to adjust for the variability inherent in new construction and renewable generation. VCE has incorporated multiple measures to ensure it meets its RPS compliance obligations. VCE has incorporated a Voluntary Margin of Overprocurement (“VmoP”) in the RNS template, using the following methodology:

- For Compliance Period 4, VCE set an internal target of 42% renewable with an additional load volatility margin of 5% of the internal target, resulting in an overprocurement target that is 9.3% of VCE’s PQR.
- For Compliance Period 5 and 6 VCE is adopting a VmoP of 5% of the PQR for each Compliance Period.

VCE has observed historical load variances within 5% of the weather normalized load forecast; therefore, VCE believes this VmoP method will comfortably ensure VCE meets its RPS compliance obligations. VCE is taking a Compliance Period view of procurement, particularly during Compliance Period 4, when VCE is in a critical transitional period of new long-term resources coming online. The negative VmoP shown in 2021 and 2022 acknowledges that much of VCE’s

Compliance Period 4 renewable delivery will be from projects coming online later in the Compliance Period.

In addition to the VmoP, VCE is incorporating a MmoP by risk adjusting the expected volumes from its in-development resources. As VCE's supply portfolio matures, its MmoP methodology will adapt accordingly. The inputs that drive VCE's amount of MmoP revolve around:

- The certainty of risk-adjusted deliveries from facilities in development. The higher the certainty, the lower the MmoP. The certainty depends on the technology type, developer experience, site control, permitting status, and interconnection progress. The forecasted failure rate for RPS Facilities in Development is based on VCE's Project Viability Calculator. VCE's calculator derives largely on the Commission's Project Viability Calculator, with minor modifications tailored to CCA procurement. Each project's viability score is used to adjust expected quantities across the entire contract term.
- The balance of online versus in development resources delivering VCE's expected volumes during the compliance period. VCE's Compliance Period 3 RPS volumes were primarily contracted from fixed volume REC contracts. A 0% forecasted rate of failure was applied for all fixed volume contracts. VCE's remaining contracted deliveries from online resources are from a small hydro project. The contract expected quantity was developed by averaging 18 years of historical generation data, from 2000 to 2018. The historical data ranged from 0 to nearly 20,000 MWh per year and covered drought conditions, wildfire risk, and transmission contingencies. Due to the project's small volume relative to VCE's portfolio, VCE believes the use of this historical data set sufficiently captures the inherent risk in the expected quantity. Therefore an additional failure rate was not applied to online generation. As VCE's portfolio develops with additional resources coming online in the next three years, we will explore developing a more robust approach to modeling online generation failure rate, such as multi-variable stochastic modeling.
- The number of years left in the compliance period before it ends. For example, the MmoP would be larger for Compliance Period 4 in the 2022 planning process versus 2020 if there were still remaining procurement required in 2022. VCE is not applying an additional risk margin in the 2021 planning process due to the remaining time in the Compliance Period.

Since VCE is in the early stages of planning for Compliance Period 4 and the executed contracts for projects in-development are for solar and solar plus storage, which have predictable output, and VCE's online small hydro generator delivers consistent volumes, the MmoP in Compliance Period 4 is minimal at approximately 32,000 MWh. The risk adjustment percentage resulting from VCE's Project Viability Calculator is reflected in row Fbb of the RNS template. Since this MmoP derives from the viability of in-development projects, the failure percentages are expected to drop as project development progresses. The quantities of targeted procurement with MmoP built-in are detailed in Section 8 under RNS calculations.

VCE's overprocurement target is achieved by a combination of two factors in procurement planning: (1) the conservative estimates used in online delivery date and volumetric generation for supply forecasts; and (2) VCE's higher internal renewable energy procurement targets. For example, while the RPS requirement for Compliance Period 4 is 40% by default, VCE's Plan is currently based on an internal renewable energy target of at least 42%. This target could vary depending on factors such as customer preference, the market for renewable, and economic conditions. The higher-percentage target used for procurement planning combined with conservative, low-side biased forecasts for generation equates to a procurement plan with a safety margin built in. As a result, VCE will be targeting procurement of at least 182,000 MWh of additional renewable energy for Compliance Period 4 to reach its 42% target. This will be acquired through short-term renewable energy purchases.

As the contracted projects approach their COD, the procurement plan will be revisited for adjustments as necessary. As VCE gains more experience and stabilization around assumptions for load forecast and supply availability, the method for building in a MmoP will be refined further.

#### **IX.B. Minimum Margin Scenarios**

As part of the RPS procurement planning process, VCE has developed a worst-case scenario analysis. The objective of this is to stress test the renewables delivery and online date assumptions against RPS requirements. This stress test is focused on Compliance Period 4 because it is closest in time and depends on critical milestones. VCE has more time to react and adjust its strategy for future compliance periods. Procurement needs for such future periods will also be affected by the outcome of VCE's current and subsequent procurement efforts.

For the stress test, CODs for contracted-for facilities under development are pushed forward until the 65% long-term requirement is no longer met. This establishes the absolute critical online date that the projects must achieve before other significant actions are required. Minimum expected volumes are used as delivery assumptions following the delayed delivery dates to maintain principles of MmoP. Short-term contract purchases are assumed to make up the shortfall volumes and maintain overall RPS compliance.

Based on this analysis, VCE can tolerate a delay of up to six months in all project guaranteed COD dates and still meet its 65% long-term requirement. This extreme scenario would require the purchase of an additional 273,000 MWhs under short-term contracts between 2021 and end of 2024 to meet VCE's PQR for Compliance Period 4. Additional scenarios on partial failure of facilities under development are discussed in Section 7. These sensitivity and scenario analyses contributed to the MmoP methodology that is incorporated into VCE's RPS Procurement Plan. The MmoP is built into the RNS in Section 8 by risk adjusting the expected volume from each in-development project, based on the project's individual Project Viability Score. The "risk-adjusted deliveries from facilities in development" therefore represents lower quantities than those expected from the in-development projects once they are online. Additionally the RNS template reflects VCE's VmoP, targeting 42% renewable for Compliance Period 4 instead of the 40% in the template.

VCE is prepared with a plan to manage these potential risks. Development status will be monitored monthly for these projects. Depending on the severity and timing of these potential impacts, VCE is prepared to take other actions to ensure its portfolio will still be compliant. For example, VCE has options for additional volumes that can be exercised. A list of non-binding back-up offers can also be accessed. Procurement of additional projects on top of what was originally contracted from the local renewables solicitation can be added as well.

**X. Bid Solicitation Protocol, Including Least-Cost Best-Fit (LCBF) Methodologies - § 399.13(a)(5)(C), D.04-07-029, D.11-04-030, D.12-11-016, D.14-11-042, and D.16-12-044. (ACR § 5.10)**

Consistent with PUC Code §399.13(a)(5)(C), in its 2018 IRP and the Action Plan contained therein, VCE issued a solicitation on August 13, 2018, to obtain renewable energy under long-term PPAs. This solicitation requested proposals from existing or proposed renewable projects located in California. Because this was VCE's first solicitation, and VCE did not have any long-



term renewable supply at the time, the solicitation did not specify targeted quantities or capacities that would be contracted for. VCE procured 122 MW of long-term contracts for solar PV from this solicitation, including a 50 MW project and a 72 MW project. Shortly after execution of the 72 MW PPA, the counterparty failed to satisfy a significant provision of the PPA, resulting in termination. VCE engaged multiple reputable developers to identify replacement project opportunities ranging in size from 50-100 MW. After conducting evaluations, a 90 MW solar plus 75 MW storage project was selected to replace the terminated solar-only PPA.

On April 20, 2020, VCE released a local renewables RFO targeting projects with capacity between 2 Mwac and 24 Mwac and a COD date on or before December 31, 2023, located in Yolo County or one of the six adjacent counties. Fourteen proposals were received by the May 26, 2020 submittal deadline. Following the evaluation of the offers, two solar plus storage PPAs, totaling 23 MW solar plus 9.5 MW storage capacity, were signed in November 2020. The remaining need of 210,000 MWh in Compliance Period 4 will be filled through short-term purchases.

VCE only considers projects that are deliverable into the CAISO and that can demonstrate Full Capacity Deliverability Status in accordance with the CAISO tariff. VCE's renewable energy solicitations are open to all types of eligible renewable energy with emphasis on projects that also support overall grid reliability to the extent such projects also are cost-effective. VCE also encourages battery storage to be offered together with wind and solar resource offers in order to increase resource diversity and further enhance the RA value and reliability of the energy from VCE's RPS portfolio, and to further align its load and supply.

In April 2020, VCE and Redwood Coast Energy Authority ("RCEA") released a joint solicitation for incremental resource adequacy ("RA") to further their contributions to the reliability of the California power grid and to fulfill their procurement obligations pursuant to D.19-11-016. The solicitation resulted in VCE PPAs for 7 MW of demand response capacity and 5 MW of battery storage capacity, signed in September 2020. In addition, VCE is currently participating in solicitations for long duration storage and clean firm power through CC Power.

#### **X.A. Solicitation Protocols for Renewables Sales**

At this time, VCE does not anticipate needing to sell renewables from its portfolio and has therefore not developed any protocols for renewables sales.

## **X.B. Bid Selection Protocols**

VCE's solicitation process includes the following steps:

1. Issue solicitation;
2. Receive Notice of Intent to Bid;
3. Receive proposals;
4. Screen proposals for meeting minimum criteria;
5. Evaluation and ranking of proposals passing the initial screen;
6. Selection of proposals for short list consideration;
7. Short list evaluation/selection of proposals for negotiation;
8. Notification to short list entities;
9. Negotiate and execute letter of intent/commercial terms sheet;
10. PPA negotiation; and
11. PPA execution.

The public website where materials can be found regarding VCE's past RFOs is: <https://valleycleanenergy.org/solicitations-rfps/>.

### **Bid Selection Process and Evaluation Methodology**

VCE's 2020 RFO evaluated proposals with the goal of acquiring local renewables under long-term contract that combined two factors: (1) have the greatest likelihood of reaching commercial operation within the timeframes needed to meet the VCE's RPS objectives; and (2) provide the "best-fit" attributes for VCE's portfolio that ensure a balanced resource mix to maintain the reliability of the electrical grid while minimizing costs and maximizing value to VCE's customers.

VCE will consider equity and impacts to economically and environmentally disadvantaged areas in future solicitations that encompass a larger footprint. This was not a significant criterion for the 2020 solicitation as there are no disadvantaged communities within VCE's jurisdiction.

Besides the direct comparison of contract terms and price among competing offers, VCE compares qualitative elements which it deems to be important for a successful project. VCE's specific bid selection criteria and further details on VCE's evaluation methodology are detailed in Section 10.C below.

## **X.C. LCBF Criteria**

VCE's future bid selection criteria will include a number of qualitative items deemed to be important for a successful project, including:

- Project team experience;
- Financing plan and financial stability of project owner/developer;
- Local/Regional resources location;
- Prior land use;
- Located in pre-screened energy development areas (avoid RETI Category 1 or Category 2 designated areas);
- Level of completeness of permits;
- Grid interconnection status;
- Site control;
- System reliability;
- Energy and capacity value;
- Congestion cost;
- Potential for curtailment;
- Operational flexibility;
- Planned land use at retirement and disposal of materials;
- Multi-benefit renewable energy (e.g. pollinator-friendly site, re-purposed agriculture use, research attributes, etc.); and
- Labor practices, including a prevailing wage requirement.

VCE applies LCBF in its selection criteria as follows. There are three components to this part of the evaluation process. They include evaluating projected market-based value, overall best fit with VCE's portfolio, and viability.

### **Economic Value**

Each offer is first evaluated on a standalone basis. The project's cost is measured against the expected value in the market based on its generation profile and dispatch characteristics. The lower its price is in relation to its determined market value, the higher it is ranked. The market value can include forecasted energy, resource adequacy capacity, ancillary services, option, and arbitrage values depending on the resource type and what it qualifies for. These market values are calculated

using historical trends, forward pricing, and generation profile. Any dispatchability, curtailment, option, or arbitrage capabilities of the resource are captured and evaluated. Basis risk between the offer's point of delivery and the Default Load Aggregation Point ("DLAP") or trading hub is also considered in determining its net economic value. This is a function of congestion costs and losses associated with the location of the resource. Please see Sections 12 and 13 below for more information on how VCE analyzes congestion costs and curtailment risks within its portfolio.

After subtracting the price of the offer from its forecasted market value, the offers are ranked according to their net economic value. As an example, a geothermal resource may have a lower relative net energy value than a solar resource, but it can score higher in VCE's bid evaluation by providing higher RA capacity than solar. If a resource is located closer to load pockets, this could help it surpass other resources in the ranking process.

### **Best Fit with Portfolio**

Proposals are also evaluated by VCE based on how they contribute to the objectives of the portfolio. This involves reviewing each offer's effect on the net position of procurement targets for RPS, energy hedges, capacity, and GHG emissions. Resources that help the net position in the most categories in a timely manner are ranked higher by VCE than those that adversely affect the net position or contribute in fewer categories. For example, a typical solar project may add value to RPS targets, but may be detrimental to the net energy position and provide little value in terms of resource adequacy, whereas a baseload geothermal unit may score higher on net energy position and capacity but possibly lower on GHG emissions. Projects that have online dates that are more in line with VCE's portfolio timing requirements are ranked higher.

Consistent with Pub. Util. Code §399.13(a)(9), VCE considers the best-fit attributes of various resource types to ensure a diversified and balanced resource mix to help support overall grid reliability. An offer's ranking is affected by what is already in VCE's portfolio and the potential combined net effects of other offers. In general, VCE's goal is to acquire resources with generation that best fit its load profile for the various seasons while complementing its overall net positions. VCE believes the more aligned its supply is with its load, the more VCE minimizes exposure to market prices. This strategy also minimizes VCE's potential contribution to the grid's supply and demand imbalance issues and supports reliability of the electrical grid. Typical average load

profiles are developed for each season. The offered resources are stacked against existing positions along with other offers for potential combinations that optimize conformance with the load profile.

Other considerations include the size, volume, term length and contract terms of each bid. VCE's objective is to build a portfolio that is diversified. Offers with term lengths that are different from those in the portfolio or other offers have relatively higher value for VCE. Offers that do not require VCE to over-commit to any one resource as part of its portfolio have higher value. The location and technology type diversity that a resource provides relative to the supply stack is also factored in, particularly as this impacts factors such as overall grid reliability.

### **Project Maturity and Development Risks**

VCE evaluates offers based on the likelihood of project completion and delivery. This is based on factors such as:

1. Interconnection Status;
2. Site Control;
3. Permitting;
4. Financing;
5. Credit;
6. Experience;
7. Technology Complexity; and
8. Supply Chain.

Project maturity and viability are important to VCE's bid selection methodology because these factors increase the chance that projects will be completed and available for delivery when expected. This is critical due to VCE's load/customer size and the resulting challenge of not being able to spread development risk among numerous projects. As such, projects that are further along in the development cycle and have more certainty of completion based on the factors above are ranked higher in VCE's current and future RFOs.

### **Project Location**

VCE's 2020 RFO gave preference to cost-effective renewable projects that provide local benefits, are located in environmentally suitable locations, minimize the impacts on species, habitats, landscapes, and agricultural lands and are to be developed in Yolo County or the adjacent six counties. One of the primary qualitative criteria for this RFO was the location of the project, including in pre-screened energy development areas. While Pub. Util. Code §399.13(a)(8) only

applies to “electrical corporations,” VCE will consider equity and impacts to economically and environmentally disadvantaged areas in future solicitations that encompass a larger footprint. This was not a significant criterion for the 2020 solicitation as there are no disadvantaged communities within VCE’s jurisdiction.

#### **XI. Safety Considerations (ACR § 5.11)**

VCE holds safety as a top priority and takes safety into consideration in all of its procurement decisions. The standard terms and conditions of its PPAs include safety-related provisions such as covenants regarding worker and job site safety precautions and compliance with prudent operating practices which include applicable laws, regulations and codes with respect to the operation, maintenance, repair and replacement of the facilities. The PPAs specifically call out the National Electric Safety Code and the National Electrical Code and would also require compliance with fire codes and other safety-related codes and regulations. The PPAs provide facility developers with the ability to reduce energy deliveries or disconnect and remove all or a portion of a facility in the interest of maintaining health and safety. Further, if a representative of VCE witnesses any testing of a facility, the PPAs require that the representative of VCE adhere to the safety and security procedures of the developer.

Although VCE does not own, operate, or control generation, distribution or transmission facilities, VCE does consider decommissioning in its resource procurement processes. VCE expects the facility developers to be responsible for all end of life disposal obligations relating to the facility. Specific plans for deconstruction or environmental remediation are generally criteria that lead agencies establish for developers at the time of California Environmental Quality Act (“CEQA”) determination and criteria that are established by state and local authorities to obtain necessary permits. As part of local permitting processes, facility developers are required to plan for facility decommissioning via the Conditional Use Permit process administered by the governing County. VCE requires developers to adhere to all environmental requirements of their permits to construct and operate facilities under PPA with VCE.

Based on safety and other considerations, resources that are located closer to load areas, which reduce reliance on long distance, high voltage transmission lines, are given higher priority in VCE’s procurement selection process. Higher value will be applied to other non-traditional resources such as distributed energy resources (“DERs”) and aggregated demand response that

alleviate transmission network upgrades. Resources with these characteristics reduce wildfire risks and Public Safety Power Shutoff events associated with transmission lines. Overall, VCE's commitment to procuring GHG-free power helps to reduce the risks of wildfires exacerbated by climate change.

VCE is willing to consider, but has not specifically sought, biomass resources in its current and past solicitations. VCE has never had biomass resources under contract, thus the relevant SB 901 requirements do not apply to VCE. VCE is not excluding biomass resources and will consider them if they are suitable to the portfolio and provide high value to VCE customers. Such resources will be evaluated along with other resources based on the principles discussed in the previous sections of this Plan pertaining to portfolio optimization/diversity/reliability, bid selection protocol, LCBF and safety. Developers or facilities bid into VCE solicitations that do not meet safety requirements are not considered for ranking.

## **XII. Consideration of Price Adjustments - § 399.13(a)(5)(E) (ACR § 5.12)**

VCE does not exclude price adjustment mechanisms in its solicitations for RPS resources. Based on its review of proposals with price adjustment mechanisms received, however, the cost premiums associated with such mechanisms outweighed the reduction in risk to VCE and its customers. As suppliers get more sophisticated or gain access to new risk management tools, this may change in the future. VCE will continue to examine proposals based on the overall value to its customers and its ability to remove risk from the supply portfolio at a reasonable cost.

Some of the mechanisms VCE considered for contracts include annual price escalators, trading hub indexed prices, hub or load-settled pricing in lieu of nodal pricing. Annual price escalators allow for lower payments in the earlier years and higher payments in later years. The rate of return and interest rate assumptions built into the escalation factors of offers were too high for VCE to consider. It is clear that both suppliers and customers prefer price certainty. Based on this, escalated price structures were less favorable to VCE's customers. Furthermore, VCE feels more comfortable with financial projections in the near term than it does in the long term. Uncertainty in fluctuations around the PCIA also complicate evaluations.

VCE also considered index pricing where the buyer pays a fixed premium on top of the spot market energy clearing price for contracted energy. This structure allocates the energy price risk back to

the seller. VCE found these deals to be less favorable for its customers as the REC premiums were priced too high for the level of risk reduction provided to the portfolio. This reflects the price certainty that project developers and their financiers prefer.

VCE also considered hub or load settled structures. Under this structure, the contractual delivery point would be at the trading hub such as NP15 or the DLAP. This would shift the cost of congestion and transmission losses to the seller. VCE found these premiums also to be too high in its received offers. This is reflective of the fact that suppliers have less access to congestion management instruments such as congestion revenue rights (“CRR”) than do load-serving entities.

At this point, VCE has not incorporated any price adjustment mechanisms to its RPS resources, but is open to reviewing and incorporating them if it makes sense to VCE’s customers. Ultimately for this to occur, the supplier must be in a better position to manage the applicable risk than the retail seller.

### **XIII. Curtailment Frequency, Forecasting, and Costs - § 399.13(a)(5)(B) and 399.15(b)(5) (ACR § 5.13)**

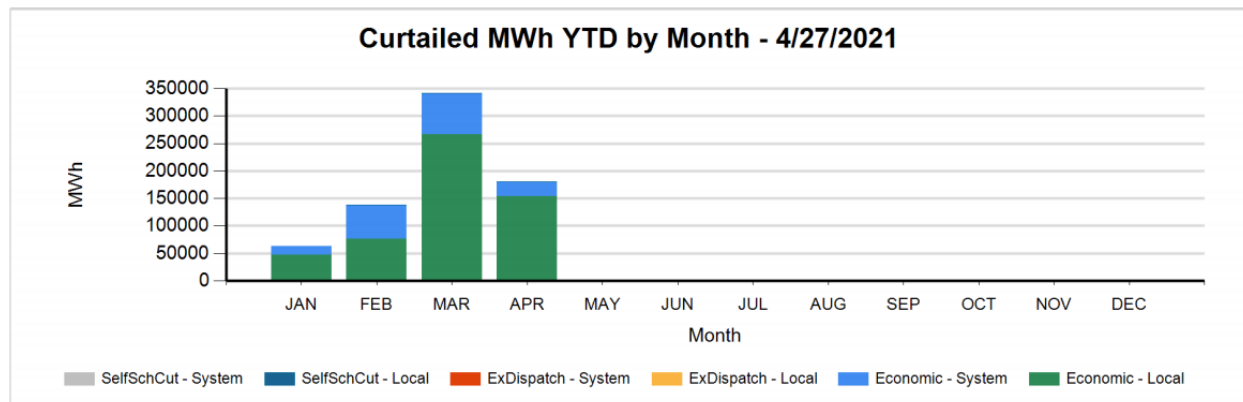
Because VCE does not yet have online resources under its control, it does not have much to report on direct experience with curtailments. VCE has given much thought to curtailment as it pertains to the planning of its power resource portfolio, however. This requires the examination of general trends in the energy markets and characteristics of different resources.

- 1. Factors having the most impact on the projected increases in incidences of overgeneration and negative market price hours.** Many factors can contribute to curtailment conditions. The obvious one is high concentration of non-dispatchable resources such as solar and wind. The near-zero variable or marginal costs of these resources combined with other plants that have must-run requirements during periods of lower load create an imbalance between supply and demand. Due to the geographic benefits for certain generation types to be in areas with preferred characteristics for development, these units tend to be built in clusters that compete for the same transmission resources. The congestion issues caused by this competition leads to negative pricing and thus curtailments. As evidenced by data from the CAISO, curtailments are largely from economic bids based on local congestion constraints. During Spring run-off months, large



hydro generation also exacerbates the issue as shown by the system-wide oversupply economic curtailments. See Figure 3 below.

**Figure 3. CAISO Monthly Curtailment by Category**



Source: [http://www.caiso.com/Documents/Wind\\_SolarReal-TimeDispatchCurtailmentReportApr27\\_2021.pdf](http://www.caiso.com/Documents/Wind_SolarReal-TimeDispatchCurtailmentReportApr27_2021.pdf)

2. **Written description of quantitative analysis of forecast of the number of hours per year of negative market pricing for the next 10 years.** VCE has not performed an in-depth analysis to predict the number hours per year of negative market pricing events for the next 10 years. This type of analysis is beyond the expertise of VCE and is more suitable for specialized consulting firms. VCE's analytical approach is to rely on studies from sources such as CAISO and NREL. For its own internal assumptions, VCE uses a combination of historical data and general projection of the overall trends of energy markets and investment in resources. For resources under consideration for VCE's power supply, studies are completed based on historical negative pricing events at the respective nodal level along with observations of development activity in the same area.
  
3. **Experience, to date, with managing exposure to negative market prices and or lessons learned from other retail sellers in California.** VCE does not have direct experience with curtailments as it does not yet have any online resources under long-term contract. VCE's existing RPS contracts are for guaranteed delivery. Lessons learned from other retail sellers include not over-committing or concentrating in one resource, accounting for curtailments in RPS compliance planning, and including contract provisions to reduce risk, overprocurement and other mitigation measures described in Sections 6 and 7 above.

4. **Direct costs incurred, to date, for incidences of overgeneration and associated negative market prices.** VCE has no direct costs incurred for overgeneration and associated negative market prices. All of its contracts to date have been for guaranteed delivery.
5. **Overall strategy for managing the overall cost impact of increasing incidences of overgeneration and negative market prices.** VCE's approach to manage the overall costs associated with curtailments is applied at different levels. On the demand side, VCE is investigating strategies to incentivize consumption behavior to better fit the profile of power supply. These may include modified rate structures, demand response programs, electric vehicle adoption, and building electrification. On the supply side, VCE intends to build a power supply portfolio with resources of different generation profiles that fit optimally with its load profile. VCE also incorporates appropriate curtailment clauses in its contracting of resources to manage the impact of these events. VCE is investing in battery storage as a dispatchable and faster-responding supply resource in its portfolio.

Another consideration VCE applies when evaluating supply resources is the location. VCE places more value on projects located in less congested areas and in areas closer to load. This minimizes the exposure to potential congestion and price basis risk.

On the policy front, VCE believes promoting improved coordination on the power grid and the proper implementation of market regionalization can help alleviate some of the impact of curtailment.

#### **XIV. Cost Quantification (ACR § 5.14)**

As required by the ACR, VCE's Cost Quantification template has been completed to reflect actual direct expenditures by year for 2018-2020 and forecast direct expenditures for 2021-2030. There are no contracts that currently require the approval of the Commission or VCE Board of Directors.

#### **XV. Coordination with the IRP Proceeding (ACR § 5.15)**

VCE's 2020 IRP, submitted on September 1, 2020, was adopted by VCE's Board on August 13, 2020, and certified by the Commission at its February 10, 2022 meeting. Table 8 (based on Table 3 in the ACR) below describes VCE's final IRP.

**Table 10: Alignment of RPS and IRP Planning**

IRP Report Section	RPS Alignment in IRPs
III. Study Results A. Conforming and Alternative Portfolios	<p>VCE filed two IRP portfolios: One that conforms with the 46MMT scenario and one that conforms with the 38 MMT scenario (“Conforming Portfolios”). For VCE, these portfolios target GHG emissions of 156,000 tons and 129,000 tons per year, respectively, by 2030. Planned and already contracted RPS resources described in other sections of this Plan are generally included in the IRP; however, the most recent three PPAs were not signed at the time the IRP was submitted. Therefore, expected procurement results were included instead. These planned and contracted resources constitute the bulk of VCE’s Conforming Portfolios based on the IRP Reference System Plan for the 2021-2025 period, including:</p> <p><u>Existing Resources (and Existing Planned)</u></p> <p>Indian Valley Hydro, 2.9 MW (Contract ID VCEA40001). This small hydroelectric resource is currently under a 5-year contract with VCE. VCE plans to continue using this resource beyond those five years if cost-effective and proven to perform as contracted. It is included as a resource for all years in the IRP.</p> <p><u>New RPS Resources (at the time of IRP submittal)</u></p> <p>VCE’s resource plan expects to rely on a mix of renewable and non-carbon resources such as solar PV, wind, hydro and battery storage. In the first half of 2020, VCE completed long-term solar PPAs for a total of 122 MW with expected online dates in Q4 of 2021:</p> <ul style="list-style-type: none"> <li>- Aquamarine Solar (Contract ID VCEA50002), 50 MW.</li> <li>- Rugged Solar (Contract ID VCEA50003), 72 MW.</li> </ul> <p>Although the Rugged PPA was terminated prior to IRP submittal, a replacement project placeholder for 75 MW PV, coming online in 2022 was included. In 2021, VCE signed the PPA for Resurgence Solar (90 MW PV + 75 MW storage) to replace the Rugged PPA. The larger size of the Resurgence Solar project reduces the capacity VCE must seek in future solicitations to achieve the Conforming Portfolio requirements.</p> <p>VCE issued an RFO for new local renewable resources in April 2020 and completed contracting for resources by the end of 2020 with expected online dates no later than the end of 2023. The IRP includes 25 MW of new local solar, whereas the actual results included 23 MW of new local solar, with 9.5 MW of integrated battery storage. Together with the already-signed contracts discussed above, this additional renewable capacity ensures that VCE meets most of its 2021-2024 RPS Compliance Period 4 mandates, with the balance coming from short-term RPS contracts. The exact capacity and resource types chosen from this RFO were not known at the time of IRP submittal.</p>

	<p>The small hydro and solar PV resource contracts described above will meet nearly all of VCE’s incremental energy resource needs in the 2021-2024 Compliance Period. VCE has also procured 7 MW of capacity from demand response, coming online before August 1, 2021, to ensure that it meets its first portion of the CPUC-mandated resource adequacy procurement requirement, in compliance with D.19-11-016. This, together with the planned renewable energy procurement, will ensure that VCE meets its procurement obligations under R.16-02-007.</p> <p>The activities described above will cover both the 46 MMT Conforming Portfolio and the 38 MMT Conforming Portfolio. In fact, VCE expects that procurement activities and action plans will remain the same regardless of portfolio, but the amount of resources procured or contracted will differ. As explained further below, the 38 MMT portfolio is expected to require additional incremental procurement and/or contracting of wind, solar, storage and large scale hydro to ensure that emissions in the 38 MMT portfolio reaches the required 129,000 tons per year by 2030.</p> <p>Together with ten other CCAs, VCE issued an RFI regarding storage options with a capacity to store energy for at least 8 hours. Although the RFI did not result in any agreements, it did inform the CCAs that economies of scale and risk diversification are essential for (1) large scale projects and (2) emerging technology projects. As a result, numerous CCAs formed a Joint Powers Authority (JPA) focused on the acquisition of energy, capacity, storage or other energy products on a scale that the individual members most likely would not be able to achieve on their own. The California Community Choice Power “CC Power” JPA includes VCE, CleanPowerSF, SVCE, 3CE, MCE, EBCE, PCE, SCP, San Jose Clean Energy, Redwood Coast Energy Authority. Through this membership, VCE joined the Joint CCA 2020 Request for Offers for Long Duration Energy Storage Capacity, issued on October 15, 2020. The solicitation process resulted in the selection of the Tumbleweed Energy Storage project, a 69 MW/552 MWh 8-hour duration lithium-ion battery project. The project is expected to come online in 2026. VCE’s share is 2.86 MW / 22.88 MWh, which will fulfill part of its long-duration storage obligation. A second project, which will fulfill VCE’s remaining obligation, was selected through the same RFO process. Contract negotiations are ongoing, with execution targeted in 2Q 2022. VCE is also participating in the 2021 Request for Offer for Firm Clean Energy Resources, released on October 25, 2021. CC Power is shortlisting projects in February and is targeting contract execution in the second half of 2022.</p> <p>VCE’s planned efforts to secure additional capacity to ensure that RPS goals are met in the 2025-2030 period are discussed below. Finally,</p>
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	VCE will supply any minor gaps in RPS-eligible supply to reach its Conforming Portfolios through the use of short-term REC contracts.
IV. Action Plan A. Proposed Activities	<p>Both of VCE's preliminary IRP Conforming Portfolios rely on a combination of RPS-eligible solar PV, wind and battery storage. Unspecified market purchases and market-available RA is expected to provide the balance of resource needs.</p> <p>As part of its action plan and its continuous operations, VCE will monitor closely the progress of construction and key milestones for its contracted new capacity that will come online between 2021 and 2023.</p> <p>In order to secure sufficient long-term RPS eligible resources in its 46 MMT Conforming Portfolio in the 2025-2030 period, VCE plans to conduct solicitations for new capacity in the 2023-2024 period covering needs in 2025-2027, and likely also a solicitation in 2025 or 2026 to cover needs for renewable energy and storage in the 2028-2030 period.</p> <p>VCE expects all of this additional capacity to be RPS-eligible renewable energy, currently estimated to be a total of 30-40 MW constituting new northern California wind and/or northern California solar resources – identified in the IRP models (RESOLVE) as Sacramento River Solar and Solano Wind. The timing and extent of this procurement activity will depend on the successful completion of VCE's in-development projects, as well as VCE's electric demand growth over the next few years. VCE does not expect any procurement barriers to impede its future contracting for new renewable energy resources, but notes that even though a balanced RPS portfolio is desirable, the limited resource availability and lead time required for some resources, such as wind and biofuels-based generation, may lead to a "solar-heavy" RPS and IRP portfolio.</p> <p>For the 38 MMT Conforming Portfolio, the resource mix is expected to be very similar to the 46 MMT Conforming Portfolio. VCE also expects that the same solicitation schedule could be used for the 38 MMT portfolio, with the difference that VCE expects to need additional resources to ensure that VCE's emissions conform with the requirements for the 38 MMT portfolio. This is likely to include about 10 MW of additional wind resources, 2-5 MW of additional solar resources, additional battery capacity and 10-15 MW of additional carbon-free, large-scale hydro resources.</p>
III. Action Plan B. Procurement Activities	<p>As highlighted above in this table, VCE completed procurement activities in 2020 and early 2021, including having entered into four PPAs for new solar capacity, three with integrated 4-hour battery storage, to come online between 2021 and 2023.</p> <p>For the 46 MMT Conforming Portfolio, the exact timing of additional procurement activities to secure RPS and IRP capacity in the 2025-2030</p>

	<p>period will depend on load growth and successful competition of VCE’s in-development projects. For the 38 MMT portfolio, similarly, there is uncertainty, and the main difference between the portfolios is the amount of wind, solar, battery, and hydro resources that will be needed, as discussed above.</p> <p>For new resources and for both of the Conforming Portfolios, VCE expects to continue using an open and competitive procurement process using RFOs. VCE’s goals include building its resource supply on local renewable capacity to the extent such capacity is available and cost-effective. VCE expects to continue this policy in the future for its long term resource plans as well as for its RPS procurement.</p> <p>After completing its 2020 procurement activities, described above in this table as well as in other sections of this Plan, VCE expects to need to add additional resources by 2026 or 2027. The IRP action plan calls for an RFO to be initiated in the 2023-2024 period to facilitate the addition of new renewable capacity in the 2026-2027 period and an additional RFO in 2025 or 2026 to cover resource needs in the 2028-2030 period. This preliminary schedule is expected to be the same for both of the Conforming Portfolios, with the difference that more resources will need to be procured if VCE is mandated to conform to the 38 MMT Conforming Portfolio, as discussed above.</p> <p>All new resources under both of the Conforming Portfolios are planned to be RPS-eligible, and VCE has a preference for further diversifying its portfolio with wind and/or biofuels based resources if those resources are available and are competitively priced. As the cost of battery storage is expected to continue to decline, VCE also expects to continue to gradually increase its use of batteries to meet its resource adequacy goals and to enhance the use of solar energy to extend beyond daylight hours. In fact, VCE sees increased use of batteries as one component of its compliance strategy under the 38 MMT Conforming Portfolio whereby using batteries to improve its integration of renewables will also help to support compliance with the 38 MMT Conforming Portfolio goal of 129,000 tons of GHGs per year by 2030.</p>
<p>III. Action Plan C. Potential Barriers</p>	<p>VCE does not expect any procurement barriers to impede its future contracting for new renewable energy resources, but notes that even though a balanced, diverse RPS portfolio is desirable, the limited resource availability and lead time required for some resources, such as wind and biofuels-based generation, may lead to a “solar-heavy” RPS and IRP portfolio. The key risk affecting both VCE’s RPS portfolio and IRP portfolios is reliance on new resources that have yet to prove that they can succeed in completing construction within the timelines contracted and that once completed, they will deliver the contracted volume of energy and capacity.</p>

	<p>VCE's Conforming Portfolios consist of a combination of solar PV, wind, hydro, demand response, and battery storage. Even though battery storage is quickly moving to the mainstream in terms of resource choice for capacity in California, this technology remains largely unproven in large scale and long term applications as is foreseen in California. Storage performance may therefore become both a risk and barrier if actual performance falls short of expectations. This barrier is something all LSEs in California have in common.</p> <p>Risks and barriers are more likely to be encountered for resources supporting intermittent RPS-eligible capacity, such as short- and long-term storage and demand response.</p> <p>For two reasons, VCE does not see any risks in its portfolio due to retirements of existing renewable energy sources. First, the only existing renewable energy resource under contract is the Indian Valley small scale hydro plant that provides 6,450 MWh of energy each year, which can relatively easily be replaced by other resources or market purchases. Second, over the next 3-5 years, VCE expects to eliminate its need for procurement of market RECs from existing resources and will instead contract directly for new resources under the long term contracts described in other parts of this report. Compliance with the RPS will therefore not depend on retaining existing resources, but will instead rely on the long term performance of newly-built renewable resources.</p>
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Respectfully submitted,

/s/ Sheridan Pauker

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*Counsel to Valley Clean Energy Alliance*

Dated: February 17, 2022

### **Officer Verification**

I am an officer of the reporting organization herein and am authorized to make this verification on its behalf. The statements in the foregoing document are true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters, I believe them to be true. The spreadsheet templates used within this filing have not been altered from the version issued or approved by Energy Division.

Executed on February 17, 2022, at Davis, California.



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## 2021 RPS Procurement Plan Checklist - Task Completed

Retail seller name: Valley Clean Energy	YES/ NO	NOTES
I. Major Changes to RPS Plan	Yes	
II. Executive Summary	Yes	
III. Summary of Legislation Compliance	Yes	
IV. Assessment of RPS Portfolio Supplies and Demand	Yes	
IV.A. Portfolio Supply and Demand	Yes	
IV.A.1. Portfolio Optimization	Yes	
IV.B. Responsiveness to Local and Regional Policies	Yes	
IV.B.1 Long-term Procurement	Yes	
IV.C. Portfolio Diversity and Reliability	Yes	
IV.D. Lessons Learned	Yes	
V. Project Development Status Update	Yes	
VI. Potential Compliance Delays	Yes	
VII. Risk Assessment	Yes	
VIII. Renewable Net Short Calculation	Yes	
IX. Minimum Margin of Procurement (MmoP)	Yes	
IX.A. MmoP Methodology and Inputs	Yes	
IX.B. MmoP Scenarios	Yes	
X. Bid Solicitation Protocol	Yes	
X.A. Solicitation Protocols for Renewables Sales	Yes	
X.B. Bid Selection Protocols	Yes	
X.C. LCBF Criteria	Yes	
XI. Safety Considerations	Yes	
XII. Consideration of Price Adjustments Mechanisms	Yes	
XIII. Curtailment Frequency, Forecasting, Costs	Yes	
XIV. Cost Quantification	Yes	
XV. Coordination with the IRP Proceeding	Yes	
Appendix A: Redlined Version of the Final 2021 RPS Plan	Yes	

## **Appendix A**

Redline Comparing VCE's 2021 Final RPS Procurement Plan to its 2021 Draft RPS  
Procurement Plan

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Continue  
Implementation and Administration, and  
Consider Further Development, of California  
Renewables Portfolio Standard Program.

Rulemaking 18-07-003  
(Filed July 12, 2018)

~~DRAFT~~FINAL 2021 RENEWABLES PORTFOLIO STANDARD PROCUREMENT  
PLAN OF  
VALLEY CLEAN ENERGY ALLIANCE

PUBLIC VERSION

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Dated ~~July 1, 2021~~February 17, 2022

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BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Continue  
Implementation and Administration, and  
Consider Further Development, of California  
Renewables Portfolio Standard Program.

Rulemaking 18-07-003  
(Filed July 12, 2018)

~~DRAFT~~FINAL 2021 RENEWABLES PORTFOLIO STANDARD PROCUREMENT  
PLAN  
OF VALLEY CLEAN ENERGY ALLIANCE  
PUBLIC VERSION

I. INTRODUCTION

In accordance with Public Utilities (“Pub. Util.”) Code § 399.13(a)(5), the California Public Utilities Commission’s (“Commission”) Decision (“D.”) 19-12-042 and D.21-01-005, respectively, on 2019 and 2020 Renewables Portfolio Standard Procurement Plans, the Assigned Commissioner and Assigned Administrative Law Judges’ Ruling Identifying Issues and Schedule of Review for 2021 Renewables Portfolio Standard Procurement Plans (“ACR”), and the ~~E-Mail Ruling Granting East Bay Community Energy’s Extension Request And Modifying The Commission’s Decision on~~ 2021 Renewables Portfolio Standard Procurement ~~Plan Review Schedule (May 7, 2021)~~Plans (D.22-01-004), Valley Clean Energy Alliance (“Valley Clean Energy” or “VCE”) hereby submits this ~~Draft~~Final 2021 Renewables Portfolio Standard Procurement Plan (“RPS Procurement Plan” or “Plan”).

A. Background

VCE was formed as a Joint Powers Authority (“JPA”) of the City of Davis and County of Yolo in 2016. The City of Woodland joined the JPA in June 2017, and the City of Winters joined in 2021. The members formed VCE for the purposes of implementing a community choice aggregation (“CCA”)/Community Choice Energy (“CCE”) program to allow VCE to provide electric generation service within their respective jurisdictions. VCE initiated customer service on June 1, 2018. As of ~~June~~February 15, ~~2021~~2022, VCE is serving approximately 62,000 customer accounts, which are expected to have a retail load of ~~719,098~~762,340 megawatt-hours (“MWh”) in 2021. VCE has contracted with Sacramento Municipal Utility District as its wholesale energy services provider to procure energy resources on its behalf including those necessary to satisfy RPS and

discretionary renewable energy requirements for its beginning years of operation. VCE filed its Final 2020 RPS Procurement Plan on February 19, 2021. In accordance with ~~the ACRD.22-01-004~~, VCE is filing this ~~Draft~~Final 2021 RPS Procurement Plan.

## **II. RPS PROCUREMENT PLAN**

### **I. Summary of RPS Major Changes (ACR § 5.1)**

As compared to its Final 2020 RPS Procurement Plan, VCE's ~~Draft~~Final 2021 RPS Procurement Plan has been updated to include a description of recent customer expansions. In 2020, VCE extended service to net energy metering ("NEM") customers in the original service territory. In 2021, VCE expanded its service territory to include the City of Winters. The ~~Draft~~Final 2021 Plan discusses VCE joining the California Community Choice Power ("CC Power") JPA in April 2021. CC Power is focused on acquisition of energy, capacity, storage or other energy products on a scale that the individual members most likely would not be able to achieve on their own. The Plan also provides updated additional analysis of VCE's renewables resource portfolio, and compliance with all new requirements articulated in the ACR.

### **II. Executive Summary – Key Issues (ACR § 5.2)**

The 2021 RPS Procurement Plan discusses VCE's planning process to evaluate its current and future net renewable positions and demonstrates that VCE is well positioned to meet or exceed all RPS requirements in the current RPS Compliance Period 4 (2021-2024), as well as in RPS Compliance Period 5 (2025-2027) and beyond. The Plan describes the assumptions used by VCE in forecasting demand and supply. It applies lessons learned internally and from other retail sellers and market players. Observed trends and regulatory changes are incorporated into the Plan. These all help to determine the next procurement steps VCE plans to take in order to meet RPS requirements and VCE-established targets.

VCE recently increased its customer base through two expansions. As described in Valley Clean Energy Alliance Addendum No. 1 to the Community Choice Aggregation Implementation Plan and Statement of Intent, VCEA program expansion Phase 1b included the enrollment of the Net Energy Metered ("NEM") customers in VCE's original service territory during January through December of 2020. As described in program expansion Phase 2, VCE expanded its service territory to the City of Winters in 2021. It enrolled non-NEM customers in Winters in January 2021 and ~~is~~

~~enrolling~~enrolled NEM customers in January through December 2021 based on customer true-up periods. These expansions are included in VCE's load forecast and RPS planning assumptions.

VCE has completed its first two renewables solicitations, launched in 2018 and 2020. As a result of these solicitations, four new-build renewable resources, three of which include battery energy storage systems ("BESS"), will be added to the power supply portfolio. The output from these resources is expected to meet most of VCE's RPS requirements for current and future compliance periods. See Table 1 below for the commercial operation date ("COD") and capacity for the four PPAs that resulted from the 2018 and 2020 solicitations.

**Table 1: Long Term PPAs**

<b>Long Term PPAs</b>	<b><u>Actual or</u> Expected COD</b>	<b>Capacity</b>
Resurgence Solar I	12/31/2022	90 MW PV, 75 MW BESS
Aquamarine Solar	9/ <del>24</del> <u>22</u> /2021	50 MW PV
Putah Creek Energy Farm	<del>10/15/21</del> <u>7/1/2022</u>	3 MW PV, 3 MW BESS
Gibson Solar	3/31/ <del>23</del> <u>2023</u>	20 MW PV, 6.5 MW BESS

VCE's current analysis indicates that Compliance Period 4 and 6 will likely require additional renewables procurement that can come from short-term or long-term contracts (see RNS Template, Appendix B). VCE's desire is to fulfill these future requirements with new-build resources; however, VCE's plans will adapt to changes in the renewable energy market, customer preferences, and economic conditions.

Many lessons learned have been incorporated in the planning process. Of key significance is the integration of the relationship between RPS goals and reliability. As such, many of the changes in VCE's approach to RPS procurement planning revolve around how resources complement overall grid reliability and stable energy markets. Specifically, VCE is procuring new renewable energy resources paired with BESS, shown in Table 1, which provide additional resource adequacy benefits that will help meet California's net peak load while complementing VCE's procurement outside of meeting RPS goals, which includes demand response and stand-alone BESS resources. There is also an increased emphasis on maintaining flexibility in the portfolio to deal with unexpected changes in trends, markets, and policy. As important as it is to be aware of the

procurement needs over a long-term horizon, it is equally important to not over-commit in the short-term. These lessons learned play an important part in meeting RPS goals while maximizing customer value.

The focus of VCE's 2021 RPS Procurement Plan is to ensure that long-term and short-term goals of the RPS program and VCE are both met with certainty. Potential risks have been identified and methods to manage these risks are discussed. Next steps in the procurement process are described.

### **III. Compliance with Recent Legislative Impact on Regulatory Changes (ACR § 5.3)**

VCE is not only poised to meet or exceed its current and near-term RPS compliance obligations, but is also planning for and taking action to meet later RPS compliance period obligations, as well as California's ambitious 100% clean electricity by 2045 target, as specified in SB 100. VCE is also planning for and taking action to meet its required procurement for incremental capacity pursuant to Commission orders in the Integrated Resource Planning proceedings.

VCE's renewable percentage for its first three years of operation (2018-2020) was over 45% of retail sales. This exceeds the Compliance Period 3 RPS Procurement Quantity Requirement ("PQR") of 31% by more than 14 percentage points.

VCE is internally targeting a baseline of at least 42% renewables in procurement planning for Compliance Period 4, as compared to the 40% renewables PQR required using the straight-line method from D.11-12-020 and D.19-06-023. With the current resources under contract and risk-adjusted forecasts of load and supply, VCE estimates it will only need to procure an additional ~~9398~~,000 MWh of renewables to meet its PQR for Compliance Period 4 under SB 100. VCE has also built in ~~11784~~,000 MWh in Voluntary Margin of Overprocurement ("VMOP") to account for potential load volatility. This additional purchase can be met with short-term renewable energy credit ("REC") purchases over the next 3 years as VCE's percentage of RECs from long-term contracts is anticipated to be over ~~7779~~% in Compliance Period 4. There is the possibility that the three projects under development under VCE's ~~four~~ long-term renewables contracts come online before the guaranteed CODs used in the RNS template and planning process, which would increase expected volumes between ~~2021~~2022 and 2023.

Moreover, with the signing of four long-term renewable contracts in 2020 and 2021, VCE will comfortably exceed the 65% long-term RPS contracting requirement of SB 350. This is



demonstrated in the RNS template as most of the quantities in Row 13, “Risk-Adjusted RECs from Online Generation (MWh),” and all quantities in Row 15, “Risk-adjusted RECs from RPS Facilities in Development” are from ~~these~~VCE’s four long-term contracts, which represent ~~777~~9%, 104%, and 83% of “Net RPS Procurement Need (MWh)” for Compliance Periods 4, 5 and 6, respectively. The execution of three of these contracts in 2020 also complies with the D.12-06-038 requirement that a new retail seller must execute a long-term contract in its first compliance period of operation for a minimum quantity of at least 0.25% of retail sales in its first year of operation. VCE’s retail sales in its first year of operation, 2018, were 394,935 MWh. The 0.25% requirement of 987 MWh is surpassed by the three long-term contracts executed in 2020.

VCE will address the current projected shortfall in Compliance Period 4 through short-term RPS contracts. The projected shortfall in Compliance Period 6 will be addressed through additional RFOs or short-term contract purchases, depending on project risks, the expected energy costs, and preference of VCE’s customers.

With respect to proposed legislation, VCE has formally supported Senate Bill (“SB”) 612 (Portantino). SB 612 would require the Commission to require electric investor-owned utilities (“IOUs”) to offer CCAs and electric service providers (“ESPs”) an allocation of legacy electrical resources for which departing load customers bear cost responsibility, including electric resources procured for RPS compliance. SB 612 would also require the Commission to “recognize and account for the value of all products in the electrical corporation’s legacy resource portfolio in determining the nonbypassable charge to be paid by the bundled and departing load customers to recover the costs of legacy resources.”

VCE has also supported SB 99 (Dodd), which would create a grant program administered by the California Energy Commission for local governments, CCAs and regional energy collaboratives to develop community energy resilience plans and expedite permit review of distributed energy resources. SB 99 would also require a public utility, as defined, to share information identifying critical facilities and areas most likely to experience a loss of electricity with the entity preparing a community energy resilience plan.

VCE has also supported Assembly Bill (“AB”) 843 (Aguiar-Curry). AB 843 authorizes CCAs to voluntarily bring contracts to the CPUC for bioenergy projects procured via the BioMAT feed-in-

tariff. The bill would clarify that CCAs are eligible to retain the RPS and RA benefits of the energy procured under this section.

In July 2021, VCE ~~will be meeting~~met with the Yolo County Planning Commission to discuss issues around balancing land use and new local renewable development.

**IV. Assessment of RPS Portfolio Supplies and Demand - §§ 399.13(a)(6)(A), 399.13(b),  
Compliance to D.17-06-026 Implementing SB 350's Requirement for Long-term  
Procurement (ACR § 5.4)**

**IV.A. Portfolio Supply and Demand**

**Assessment of Demand**

VCE's RPS planning process begins with demand by refining retail sales forecasts through 2030. Forecasts are based on 5 years of historical data, then compiled with assumptions for future economic growth, customer opt-ins/opt-outs, usage trends, energy efficiency, and policy implications. The load forecasts used in the RNS template incorporate the most up to date assumptions (as discussed in Section 8) and are weather normalized for future years. VCE only considers projects that are deliverable into the CAISO and that can demonstrate Full Capacity Deliverability in accordance with the CAISO tariff. Please see Sections 4.A.1 and 4.C below for a description of VCE's approach to considering deliverability characteristics and its load profile as part of its procurement process.

**Assessment of Supply**

Forecasts for supply begin with an assessment of current projects under contract with procurement for all years through 2030 in mind. VCE's executed RPS contracts and how the contracted volumes compare to VCE's forecasted load are shown in Tables 2 and 3 below, respectively.

**Table 2: Summary of VCE’s Executed RPS Contracts**

RPS Contract	Tech.	Capacity	<del>Guaranteed</del> <u>Actual</u> <del>or Expected</del> COD	Term	Expected Annual Output (degradation and battery round trip efficiency built-in)
Aquamarine	Solar	50 MW	9/ <del>24</del> <u>22</u> /2021	15 Years	130,071 MWh
Resurgence Solar I	Solar + Storage	90 MW PV, 75 MW BESS	12/31/2022	20 Years	254,640 MWh
Indian Valley	Small Hydro	2.9 MW	Online	5 Years	6,448 MWh
Putah Creek Energy Farm	Solar + Storage	3 MW PV, 3 MW BESS	<del>10/15/21</del> <u>7/1/2022</u>	20 Years	6,649 MWh
Gibson Solar	Solar + Storage	20 MW PV, 6.5 MW BESS	3/31/ <del>23</del> <u>2023</u>	20 Years	50,902 MWh

**Table 3: Summary of Executed RPS Contract Volumes vs. Forecasted Load**

Average Annual Load (2021-2030)	<del>764,352</del> <u>768,676</u> MWh
Average Total Expected Annual Output	<del>344,336</del> <u>353,721</u> MWh
Average Renewables %	<del>45</del> <u>46</u> .0%

As discussed in more detail in Section 7 below, VCE assesses the risk associated with the amount of production from such facilities based on “P50” assumptions (where 50% of possible output scenarios exceed the assumption). The start date used for projects in development is based on the later of guaranteed COD or expected COD. The responses in Section 5 detail the projects under development incorporated in the planning process. The output of projects under development, as well as VCE’s online small hydro project and solar project, are used to calculate the net yearly positions. VCE chooses to use a more conservative guaranteed COD, rather than the contract expected COD date, to reflect the quantities in the RNS template for procurement planning purposes. Curtailment assumptions used in the assessment are based off the discussion in Section 13. There are challenges of forecasting curtailments for 10 years out with confidence in its reliability. Because of this, the assessment uses an average 5% assumed curtailment rate across all 10 years for the PV-only project. Curtailment assumptions start at 2% in the first two years based on an analysis of recent negative pricing events at the PV project’s pnode, and increase over time

based on an assumption of increasing renewable penetration and therefore increasing negative pricing events. The solar plus storage projects do not incorporate a curtailment assumption, due to the ability of the BESS to store excess generation during negative pricing events. Protection against curtailment was a key factor in VCE replacing its terminated solar PPA with a solar plus storage PPA, as described in more detail in Section 10 below.

Curtailment of existing resources is not a significant risk to VCE's RPS compliance going forward since the ~~vast~~ majority of renewable energy VCE plans to use to meet its RPS obligations will be from the aforementioned contracted projects under development rather than existing resources, as demonstrated in the RNS template by comparing the quantity of Risk-Adjusted RECs from Online Generation (MWh) in Compliance Period 3 of approximately 789,000 MWh to the forecasted quantity for Compliance Period 4, which drops to approximately ~~8+511~~,000 MWh, and to ~~even~~ smaller quantities in later Compliance Periods.

With these assumptions, the resources currently under contract will achieve a power mix that is 37% renewable for Compliance Period 4, 54% for Compliance Period 5, and 50% for Compliance Period 6. Thus, VCE will require minimal additional REC volumes (approximately ~~76~~% of its load) to meet RPS requirements for Compliance Period 4, as demonstrated in VCE's RNS template (Appendix B) that shows VCE's Annual Net RPS Position after Bank Optimization (MWh) will be approximately ~~240182~~,000 MWh short relative to Total Retail Sales of approximately ~~2,932,537975,779~~ MWh over Compliance Period 4. Under these same assumptions for Compliance Period 4, over ~~7779~~% of VCE's RECs will come from long-term contracts of at least 10 years, exceeding the 65% long-term contract requirement.

### **Procurement Implications and Strategy**

Due to the possible variability in the assumptions, VCE's strategy will be to monitor the development and status of its projects on a monthly basis and adjust incremental purchases as needed from either short-term or long-term contracts. This is appropriate since 2021 is the beginning of Compliance Period 4 and allows for time to react to deviation from the assumptions. VCE is also prepared to procure additional resources to ensure it meets the 65% long-term contract requirement through future RFOs or bilateral negotiations should its current projects fail to deliver. VCE has demonstrated its ability to quickly replace projects when needed through its efficient

procurement of the Resurgence Solar I project. Additional risk assessment details and mitigation strategies are discussed in Section 7.

For future Compliance Period 6, VCE will need additional purchases of approximately 10% of its retail sales to meet RPS requirements. Percentages of renewable energy purchases for Compliance Period 6 will exceed the 65% long-term contract requirement without additional long-term commitments. However, VCE's general preference is to procure new-build resources to meet the remaining quantities identified in the RNS template. VCE also has goals of more ambitious renewable energy percentages than the RPS program itself. Procurement decisions around these considerations will depend on economics, risk assessment, and preference of VCE's customers.

As VCE's supply portfolio is increasingly developed, choices regarding the technologies and operating characteristics of each incremental resource become more critical. VCE is interested in resources that add dispatchability, diversification, and operational flexibility, and will place an emphasis on these characteristics in future procurement solicitations. VCE's commitment to these resource characteristics is demonstrated by its recent addition of three solar plus storage resources. Future solicitations may focus on such resources as demand response, wind, and/or additional energy storage. Although forecasted generation from current projects in development is expected to exceed the 65% long-term contract requirement in future compliance periods, VCE's preference is to fulfill the remaining RPS requirements with new-build resources as well. This will require additional solicitations in the future to fulfill the Compliance Period 6 requirement.

As a result of the demand and supply assessments, VCE's projected procurement actions for 2021 and the next 10 years are as follows:

- Monitor status reports on facilities in development on a monthly basis.
- Monitor actual retail sales vs. forecasts on a monthly basis.
- Revise long-term forecasts on an annual basis.
- Assess the need for additional RFOs on an annual basis.
  - Although additional solicitations have not been formally scheduled, VCE anticipates there will be at least one other formal RFO between 2023-2024 to address the ambitious renewable and carbon free goals of its customers.
- Purchase renewable energy under short-term contracts as needed to meet any small gaps in annual and compliance period targets.

- Maintain contact with potential suppliers of additional resources outside of the formal RFO process.

As discussed in Sections 6 and 7, VCE's greatest threat to meeting RPS goals is potential delays in development of new contracted projects. Procurement actions to address this risk include:

- Soliciting offers on an individual basis outside of the formal RFO process. VCE is following up on other short-listed offers that did not make the final list that have projected COD dates that align with portfolio needs. VCE is also contacting developers about projects that were not submitted during the formal RFO. These projects could reach execution either by an approved increase in renewable targets or development delay for existing contracts.
- Purchasing renewable energy under short-term contracts from existing facilities. VCE will use the sensitivity analysis discussed in Section 7 along with other considerations to determine the need and timing of additional purchases to maintain RPS targets. VCE's preference is to procure long-term, new-build resources, however, use of additional short-term contracts from existing facilities is an option should the conditions warrant.

#### **IV.A.1. Portfolio Optimization**

##### **Portfolio Optimization Goals & Strategies**

VCE's renewable resource portfolios will be optimized based on the following:

- 1) Procuring the optimal mix of generation resources that match the profile of load demand.
- 2) Developing a portfolio with resources of diverse technology types, geographic locations, and contract terms.

VCE believes a supply portfolio of resources that corresponds to its load profile minimizes exposure to energy markets, supports overall grid reliability and delivers the best value to customers. For time periods where a retail seller's demand is higher than its generation supply, the retail seller is exposed to purchasing energy on the spot market at unknown prices. For time periods where a retail seller's demand is lower than its generation supply, the retail seller is exposed to selling its supply on the spot market at unknown prices. Coordinating and aligning the supply with demand as best as possible across VCE's entire electric portfolio minimizes the time periods where VCE is forced to take a speculative position in the market. Since VCE's objective is to serve its customers with cost certainty, minimizing these time periods where an imbalance exists is a key objective to optimizing its portfolio.

Diversifying the power supply helps reduce overall risk. For example, a portfolio that only contains baseload generation such as biomass or geothermal may not address the fluctuations in hourly load that exists for VCE. For these hours where the supply and demand do not match, VCE would be purchasing or selling energy in the spot market to match its load. Adding peaking or dispatchable generation allows VCE to call on the additional energy when it is needed. Demand response or storage could be used to absorb excess supply during hours where generation exceeds load.

### **Solicitation Implications**

These portfolio optimization principles impact and drive VCE's RPS procurement plan. Thus, in future solicitations, VCE will be focused on procuring resources that have characteristics such as baseload, dispatchable, or load modifying capabilities. VCE's recent procurement actions demonstrate its commitment to resource dispatchability and resource adequacy, with three contracts signed in 2020 and 2021 that include battery storage. As discussed above, VCE will be determining the extent to which additional solicitations are needed in 2023-2024, and over the next 10 years. This could come from resources such as biomass, geothermal, additional battery storage, or aggregated demand response. These are the types of resources that VCE will be seeking to align power supply with its demand and load curve, and to diversify its portfolio.

In June 2020, 11 CCAs including VCE released a Joint Request for Information for long-duration storage resources.<sup>1</sup> Responses were due on July 1, 2020. Although the RFI did not result in any agreements, it did inform the CCAs that economies of scale and risk diversification are essential for (1) large scale projects and (2) emerging technology projects. As a result, numerous CCAs formed a JPA focused on the acquisition of energy, capacity, storage or other energy products on a scale that the individual members most likely would not be able to achieve on their own. The CC Power JPA includes VCE, CleanPowerSF, SVCE, 3CE, MCE, EBCE, PCE, SCP, San Jose Clean Energy, Redwood Coast Energy Authority. As an update from VCE's 2020 Plan, we note that VCE, along with CleanPowerSF, joined CC Power on April 21, 2021. Other CCAs may elect to join in the future, further increasing the buying power of CC Power. ~~Through this membership, VCE will continue to monitor the development and cost effectiveness of long duration storage resources.~~ Through this membership, VCE joined the Joint CCA 2020 Request for Offers for Long

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<sup>1</sup> The RFI materials are available here: <https://www.peninsulacleanenergy.com/current-rfp-rfo/rfi-long-duration-storage/>.

Duration Energy Storage Capacity, issued on October 15, 2020. The solicitation process resulted in the selection of the Tumbleweed Energy Storage project, a 69 MW/552 MWh 8-hour duration lithium-ion battery project. The project is expected to come online in 2026. VCE's share is 2.86 MW / 22.88 MWh, which will fulfill part of its long-duration storage obligation. A second project, which will fulfill VCE's remaining obligation, was selected through the same RFO process. Contract negotiations are ongoing, with execution targeted in 2Q 2022. VCE is also participating in the 2021 Request for Offer for Firm Clean Energy Resources, released on October 25, 2021. CC Power is shortlisting projects in February and is targeting contract execution in the second half of 2022.

### **Mid-Term Reliability Procurement**

D.21-06-035 (Mid-Term Reliability Decision), adopted in the IRP rulemaking (R.20-05-003) in June 2021, established a procurement target of 11,500 MW of new net qualifying capacity (NQC) coming online in 2023-2026, all from zero-emitting generation resources and/or energy storage, including RPS-eligible resources. The Mid-Term Reliability Decision includes specific requirements for (1) RPS or zero-emitting resources coming online in 2023-2025, a subset of which must be met by resources designed to replace Diablo Canyon by being available 5-10 p.m. daily, during which time period they must deliver 5 MWh per 1 MW of capacity; (2) long-duration storage; and (3) zero-emitting generating resources with a capacity factor of at least 80% that is not weather-dependent.

VCE's procurement responsibilities under the Mid-Term Reliability Decision, and a summary explanation of how it is currently planning to achieve compliance with each, are identified in the following table. Overall, the Mid-Term Reliability Decision did not significantly impact VCE's RPS Planning for the 2023-2025, but it does result in an acceleration in the timing in which VCE plans to procure clean firm resources, now required by 2026. VCE's obligations for the first category of resources—RPS eligible or zero-emitting resources coming online in 2023-2025—will be fulfilled by its Resurgence Solar long-term PPA, which was already reflected in VCE's quantitative assessment as part of its draft 2021 RPS Procurement Plan. Also of relevance to VCE's RPS planning is the zero-emitting (80% capacity factor) requirement. As described above, VCE, as a member of CC Power, is participating in an RFO that solicited clean firm power resources such as geothermal and biomass that could ultimately fulfill VCE's obligations under D.21-06-035, although no decision has been made at this time. CC Power is shortlisting projects in February



2022 and is targeting contract execution in the second half of 2022. This resource category is not yet reflected in VCE’s quantitative assessment in this RPS Plan. VCE intends to provide an update on the status of this procurement, as well as quantitative assessment of the selected resource, in its draft 2022 RPS Procurement Plan.

**Table 4. Mid-Term Reliability Procurement**

	<u>RPS eligible or Zero-Emitting</u>			<u>Diablo Replacement (Zero-Emitting)</u>	<u>Long-Duration Storage</u>	<u>Zero-Emitting (80% Capacity Factor)</u>
<u>Compliance Year</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2025</u>	<u>2026</u>	<u>2026</u>
<u>VCE Obligation (MW NQC) under D.21-06-035</u>	<u>8</u>	<u>23</u>	<u>6</u>	<u>10</u>	<u>4</u>	<u>4</u>
<u>VCE’s Planned Method of Compliance</u>	<u>Resurgence Solar 1 Long-Term PPA</u>	<u>Resurgence Solar 1 Long-Term PPA</u>	<u>Resurgence Solar 1 Long-Term PPA</u>	<u>VCE analyzing approach to fulfill</u>	<u>REV Renewables Agreement + second contract under negotiation (Long-Duration Storage RFO by CC Power)<sup>2</sup></u>	<u>October 2021 RFO issued by CC Power for Firm Clean Resources<sup>3</sup></u>

#### IV.B. RPS Plan Responsiveness to Local and Regional Policies

In addition to meeting statutory RPS requirements, VCE has implemented higher internal renewable energy procurement targets based on its Board’s goals. For example, while the RPS requirement for Compliance Period 4 is 39.9%, VCE’s procurement plan has a renewable energy target of at least 42%. Although VCE is giving itself flexibility to accommodate changing economic conditions and Power Charge Indifference Adjustment (“PCIA”) fluctuations, it is expected that this internal target will increase. These higher targets will develop as more certainty is derived from its influencing factors. They will be met with additional purchases from future solicitations. VCE’s commitment to fully source RPS requirements at an early stage is demonstrated by its procurement of 53.8% renewable energy in Compliance Period 5, 4.4 percentage points above the target of 49.4%. As shown in the RNS template (Appendix B), VCE

<sup>2</sup> <https://www.solarpowerworldonline.com/2022/01/7-california-ccas-sign-on-for-nearly-70-mw-long-duration-energy-storage-project/>

<sup>3</sup> <https://cal-cca.org/california-community-power-releases-request-for-offers-seeking-200-mw-of-firm-clean-resources/>

has already entered into RPS contracts for existing resources and resources under development that will allow it to achieve 37% renewable energy for Compliance Period 4, indicating only minimal amounts of additional short-term renewable energy purchases will be needed to meet VCE's internal goal of 42% renewable energy over the 2021-2024 period.

VCE's procurement strategy is also helping to implement Yolo County's Climate Action Plan ("CAP") that was adopted by the Yolo County Board of Supervisors in March 2011 by procuring renewable, greenhouse gas- ("GHG") free resources well above state-mandated requirements.<sup>4</sup> To meet the County's climate goals, the CAP's Action Plan specifically recommended establishing a community choice aggregation program, which was fulfilled by the launch of VCE in 2018. Additionally, VCE's recently adopted Strategic Plan (November 2020), includes objectives to engage and assist with implementation of its member jurisdictions' climate strategies. As one example, VCE senior management staff are serving on the Technical Advisory Committee for the City of Davis' Climate Action and Adaptation Plan update, ~~which is expected to be completed in late 2021.~~ As of February 2022, the workshops have concluded and the City of Davis is currently drafting a final plan. In addition, Yolo County has formed a sustainability commission appointed by board of supervisors, and VCE are contributors and serve in an advisory role on energy related issues.

#### **IV.B.1. Long-term Procurement**

VCE has executed four long-term RPS contracts, as shown in Table 4.

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<sup>4</sup> <https://www.yolocounty.org/community-services/planning-public-works/planning-division/climate-action-plan>.

**Table 45. Long Term PPAs**

Long Term PPAs	Contract Execution Date	Expected COD	Terms	Capacity
Resurgence Solar I	1/21/2021	12/31/2022	20 years	90 MW PV, 75 MW BESS
Aquamarine Solar	2/14/2020	9/ <del>24</del> 22/2021	15 years	50 MW PV
Putah Creek Energy Farm	11/13/2020	<del>10/15/21</del> 7/1/2022	20 years	3 MW PV, 3 MW BESS
Gibson Solar	11/13/2020	3/31/ <del>23</del> 2022	20 years	20 MW PV, 6.5 MW BESS

As noted, these contracts are expected to begin deliveries between 2021 and 2023. These four long-term renewable contracts will enable VCE to comfortably exceed the 65% long-term requirement of SB 350. This is demonstrated in the RNS template as all quantities in Row 15, “Risk-adjusted REC’s from RPS Facilities in Development” are from these four contracts, as well as most of the quantities in Row 13, Risk-Adjusted REC’s from Online Generation (MWh), which together represent ~~77~~79%, 104%, and 83% of “Net RPS Procurement Need (MWh)” for Compliance Periods 4, 5 and 6, respectively. The execution of three of these contracts in 2020 by VCE also complied with the D.12-06-038 requirement that a new retail seller must execute a long-term contract in its first compliance period of operation for a minimum quantity of at least 0.25% of retail sales in its first year of operation. VCE’s retail sales in its first year of operation, 2018, were 394,935 MWh. The 0.25% requirement of 987 MWh is surpassed by the three long-term contracts executed in 2020.

The risk for project delays has been incorporated into RPS Planning and is discussed in Section 7. Over the next 10 years, as it looks to future Compliance Period 6, VCE will need additional purchases of approximately 10% of its retail sales to meet RPS requirements. Percentages of renewable energy purchases for Compliance Period 6 will exceed the 65% long-term contract requirement without additional long-term commitments. However, VCE’s general preference is to procure new-build resources to meet the remaining quantities identified in the RNS template. VCE also has goals of more ambitious renewable energy percentages than the RPS program itself. These goals also help to mitigate risk of project delays or failure from contracted resources. Procurement decisions around these considerations over the next 10 years will depend on economics, risk-assessment, and preference of VCE’s customers.

#### IV.C. Portfolio Diversity and Reliability

VCE's procurement decisions assess and take into account the diversity of the resources within its portfolio, including resource types and deliverability characteristics. Portfolio diversity and reliability are key considerations in VCE's portfolio optimization as described in Section 4.A.1. Creating a power supply portfolio that aligns with VCE's load curve complements overall system needs and minimizes imbalance issues. The more VCE's supply aligns with its demand, the less it relies on the grid to supply energy during shortfalls or absorb energy when there is excess. This minimizes the amount and frequency of "leaning" on other retail sellers. VCE's recent procurement and future solicitations over the next 10 years are focused on resources with load-aligned generation profiles and dispatchability characteristics to achieve this.

Targeting a diverse portfolio of resources adds flexibility to the grid. Dispatchability, curtailment options, and unique generation profiles are key characteristics on which VCE will focus in future solicitations. This strategy has the double benefit of decreased risk for VCE customers and supporting grid reliability. For example, demand response has the benefits of reducing the need for transmission upgrades and accommodating contingencies on the grid. Storage technologies can increase the accommodation of existing renewable penetration and reduce the amount of curtailments, thereby reducing under-utilization of existing renewable resources. Investing in resources closer to load pockets reduces burden on high voltage transmission lines, which reduces the risk of wildfires. This procurement strategy also results in lower congestion and transmission loss costs for the energy portfolio. These are all important elements in VCE's future solicitations. These qualities help maximize value to VCE customers, promote grid reliability, and enhance the well-being of all communities across California.

In addition to the considerations described above, VCE recognizes electrification will increase load over the next 10 years. VCE has incorporated transportation electrification assumptions into its long-range load forecasting process. VCE's assumptions align with the California Air Resources Board, 2017 Climate Change Scoping Plan, which identified a statewide target of 5 million electric vehicles on the road in order to meet 2030 carbon emission reduction goals. To convert that goal into an EV forecast, VCE developed an adoption curve for statewide EV counts from 2010 and prorated the statewide adoption curve to its territory based on population. To establish a load impact, EV counts were applied to EV charging curves developed by NREL, as

published in the California Energy Commission's report on plug-in electric vehicle charging infrastructure. VCE's baseline forecast assumes total additional annual load from EVs to be 50 GWh by 2030. VCE will monitor actual transportation electrification over time. If the adoption is faster than forecast, VCE will procure additional short-term RPS contracts as needed to maintain portfolio targets. Long-term assumptions will be recalibrated to determine any need for additional long-term RPS contracts. Transportation electrification increases load shape uncertainty, based on the time of day that customers charge their vehicles. As described above, VCE's future portfolio growth will focus on resource diversity to reliably serve VCE customers and contribute to the reliability of the California grid. Additionally, VCE will explore rate design that incentivizes charging at times of day that improve load shape and optimizes fit with VCE's portfolio of resources.

Part of VCE's 2021 RPS Procurement Plan is to maintain some flexibility in its portfolio through 2030. This strategy is intended to accommodate the integration of future resources that may have operating characteristics that differ from those of existing technologies. For the near term, battery storage is an example of what makes sense as an addition to VCE's portfolio. As discussed above, three of VCE's four long-term renewables contracts greater than 10 years in length include battery storage. It is important to be aware of how prices might evolve over time, however, to ensure the supply portfolio is not dragged down by expensive resources. Flexibility is also important because of unanticipated trends or events. Transportation electrification is expected to alter energy usage. Since VCE is seeking to procure renewable resources that will align with its load profile in its recent and future solicitations, trends in transportation electrification are accounted for in its RPS procurement planning process.

VCE is open to all resource types, including emerging and hybrid technologies. The adoption of newer technologies into VCE's power supply will depend on how such resources complement the portfolio and the costs associated with these resources. Emerging technologies tend to be more expensive and potentially pose unknown risks that need to be understood and examined further before VCE deems it prudent to commit too much of its small portfolio to them.

Events such as the COVID-19 pandemic could have a wide range of impacts on economic conditions and demand patterns in the coming years. Maintaining flexibility in VCE's portfolio is

important to manage costs, risks, and unexpected changes. For these reasons, VCE is choosing to maintain some open positions for future compliance periods.

To address new resource development risks, VCE attempts to diversify by signing multiple contracts for generation from smaller resources rather than one contract for a larger resource. VCE's ability to implement this strategy is somewhat limited by the size of its load and the lack of economies of scale associated with smaller projects, including transactional efficiency.

VCE recognizes the benefits of coordinated procurement efforts with other retail sellers. These include economies of scale and transactional efficiency. They allow a participating retail seller to diversify its supply across more resources than it would if entering into a contract for a large resource on a bilateral basis. There are also benefits from a reliability perspective. The coordination means a more wholistic view is taken, which more closely matches the overall needs of the grid. VCE is a member, along with numerous other CCAs, of the CC Power JPA, which is focused on the acquisition of energy, capacity, storage or other energy products on a scale that the individual members most likely would not be able to achieve on their own. Through CC Power, VCE is currently participating in a solicitation for long duration storage.

#### **IV.D. Lessons Learned**

VCE's experience with its first solicitation launched in 2018 and observation of trends and feedback from bidders has allowed it to refine its approach to RPS procurement planning. From its first solicitation, VCE has learned how to improve the streamlining of its RFO process. Through feedback from participants as well as self-evaluation, VCE plans on continually refining its solicitations. This includes timing, communications, selection criteria, and evaluation methodology.

For example, to improve the timing of launch, VCE learned that it is helpful to be aware of RFOs from other retail sellers that may have an impact on the quantity and quality of bids received. During the process, constant and updated communications as to where the retail seller is in the RFO process are appreciated by bidders. VCE has learned that clarifying next steps and expectations helps bidders understand where to focus their efforts. Engaging bidders and speeding up the short-listing process decreases the chance that bidders drop out or choose to enter into contracts with other buyers. VCE incorporated these lessons from its first solicitation and lessons

from the marketplace into its 2020 solicitation, and will continue to refine its solicitation process going forward.

Another lesson VCE learned from its RPS procurement planning processes is the need for prudent risk assessment and risk management in addition to economic optimization. For example, flexibility in the portfolio is extremely important as RPS procurement planning assumptions for the future can change. This has been historically demonstrated through unanticipated regulatory changes, shifts in technology and energy markets, load departure, severe events such as wildfires, and the COVID-19 pandemic. Flexibility and optionality in the portfolio are valuable to mitigate the impact of these events. It is important for a retail seller like VCE to avoid committing too much of its portfolio for extended time periods, especially on newer technologies. The energy markets and cost of renewables can and will change in the future. Overcommitting to certain price points and technologies can drag a portfolio down for a long time by locking a retail seller into a specific portfolio and limiting its ability to react to market, policy, or economy-wide changes. This was evident historically for some retail sellers, as the cost of renewables came down considerably over a relatively short period of time, yet such parties were stuck with higher-priced contracts. Having observed this, VCE has learned that it is prudent to approach the adoption of emerging technologies carefully and diversify investment in resources as much as possible. As such, VCE is approaching its long-term procurement planning with these elements in mind.

VCE has also observed a significant backlog in the CAISO interconnection process. With additional entities declaring carbon-free targets and procurement mandates likely to be instituted, the projects in the interconnection queue increasingly are obligated to other offtakers. To mitigate this issue, VCE has learned to begin planning for future procurements as early as possible.

#### **V. Project Development Status Update (§ 399.13(a)(6)(D)) (ACR § 5.5)**

As referenced above, and related to its initial solicitation for long-term renewable contract supply, VCE has executed four PPAs to procure 163 MW from four new-build solar PV facilities, attached to 84.5 MW of integrated battery storage. ~~Aquamarine Solar commenced construction in July 2020. Putah Creek Energy Farm is expected to commence construction in June 2021. Gibson Solar is expected to commence construction in May 2022. And Resurgence Solar I is expected to commence construction in March 2022.~~ The CODs of these four projects range from 2021 to 2023, as set forth in Table 1 and the Project Development Status Update template. The RNS calculation

in the quantitative information provided in Section 8 reflects all of these long-term renewable resources under contract. As demonstrated in the RNS template, the PPAs are forecasted to generate ~~nearly over~~ 1 million RECs in Compliance Period 4, comprising approximately ~~7779~~% of VCE's Net RPS Procurement Need for this time period. ~~When combined with the small amount of Risk-Adjusted RECs from Online Generation, this results in~~ This leaves a net RPS need of approximately ~~9398~~,000 MWh of additional renewable energy needed to achieve VCE's Compliance Period 4 Gross PQR, and ~~240182~~,000 MWh to achieve its Compliance Period 4 Net RPS Procurement Need. The additional ~~11784~~,000 MWh Voluntary Margin of Overprocurement above the Gross PQR is discussed in Section 8.

The contribution of these four projects will be significant in providing almost all of VCE's RPS requirements. All the quantities in Row 15 of the RNS template listed under "Risk-Adjusted RECs from RPS Facilities in development" come from these ~~four~~ projects. ~~Thus, it~~ Since the submittal of VCE's Draft 2021 RPS Procurement Plan, one of these projects has achieved commercial operation, and thus most of the quantities reflected in Row 13, Risk-Adjusted RECs from Online Generation (MWh), reflect this resource. It is critically important for VCE to monitor the development status of ~~these~~ the remaining projects, as discussed in Sections 6 and 7. The current development status of the projects is discussed in the table below.

**Table 6. Development Status**

<b><u>Project</u></b>	<b><u>Original Expected Commercial Operation Date</u></b>	<b><u>Current Expected Commercial Operation Date</u></b>	<b><u>Project Development Status Update</u></b>
<u>Aquamarine Solar</u>	<u>9/24/2021</u>	<u>9/22/2021</u>	<u>Operational. Successfully declared COD two days ahead of expected COD.</u>
<u>Putah Creek Energy Farm</u>	<u>10/15/2021</u>	<u>7/1/2022</u>	<u>Solar field is complete. COD is delayed due to supply chain issues impacting the BESS delivery. Once the battery is received at site, no further delays are anticipated.</u>
<u>Gibson Solar</u>	<u>3/31/2023</u>	<u>3/31/2023</u>	<u>Project is in the process of completing CEQA, which could impact COD, depending on results. PG&amp;E System Impact Study (SIS) is behind schedule but close to completed, no declared impact to COD at this time. Once study results are received,</u>



			<u>developer will provide an update on any COD impact.</u>
<u>Resurgence Solar I</u>	<u>12/31/2022</u>	<u>12/31/2022</u>	<u>Project is on schedule with construction starting later in Q1 2022. An SCE transmission upgrade, which is a predecessor to interconnection, poses a small risk to COD. Developer is working diligently with SCE to maintain schedule. No change to COD anticipated at this time.</u>

VCE expects to add additional renewable resources by 2026 or 2027. VCE’s 2020 Integrated Resource Plan (“IRP”) action plan calls for RFOs to be initiated in the 2023-2026 period to facilitate the addition of new renewable capacity in the 2026-2030 period.

Through this combination of recent and future procurement activity, VCE expects to be able to meet RPS requirements and GHG goals over the next decade. As a result, VCE does not currently anticipate needing to issue additional long-term renewable solicitations in the next two years to meet its RPS obligations, as its existing long-term renewable contracts and minor short-term procurement are expected to provide sufficient quantities of renewable energy to meet VCE’s overall PQR. Both the 0.25% long-term contracting requirement for Compliance Period 3 and the 65% long-term contracting requirement for Compliance Period 4 are fulfilled by VCE’s existing long-term renewable contracts.

The additional capacity that VCE plans to procure in future renewables solicitations will be RPS-eligible, and VCE has a preference for further diversifying its portfolio with different technologies from wind, bio-fuels, hybrid, and BESS based resources if those resources are available and are competitively priced. As the cost of BESS is expected to continue to decline, VCE also expects to continue to increase its use of BESS to meet its resource adequacy goals and to enhance the use of solar energy to extend beyond daylight hours.

#### **VI. Potential Compliance Delays - § 399.13(a)(6)(B) (ACR § 5.6)**

Although failure to meet compliance obligation is not anticipated, VCE recognizes there are many risks that threaten compliance. VCE has identified the most relevant factors that could contribute to potential compliance delays, which has allowed VCE to examine and focus on mitigation measures to manage and reduce the likelihood of these factors impacting RPS compliance.

## **Load Uncertainty**

Because compliance obligations are based on retail sales, any deviations from expected load could have an impact on VCE's ability to meet these requirements. Therefore, having a robust load forecasting methodology is of high importance. VCE projects its load using five years of historical customer interval data for enrolled and enrolling customers. The historical data is weather-normalized and then adjusted for future years based on anticipated population, housing, and economic growth, as well as customer opt-in/opt-out trends. Growth in net energy-metered solar, behind-the-meter energy storage, and plug-in electric vehicle adoption further modify the load forecast. The forecast is updated annually at the beginning of the year to obtain the most recent and accurate assumptions. Unforeseen load deviations could result from weather, opt-in/opt-out rates, and events such as the COVID-19 pandemic.

When VCE conducted its initial assessment of the load impact of the COVID-19 pandemic, economic forecasts indicated significant load reduction could result from the closure of businesses and schools during stay-at-home orders, followed by a lasting load reduction resulting from an economic recession. Actual load data collected over the past year, along with updated economic forecasts, led VCE to update its load impact assumptions. Due to a combination of residential load increase offsetting commercial load reductions and a lower likelihood of lasting economic recession in VCE's territory, the ~~Draft~~Final 2021 RPS Procurement Plan is being submitted with higher load actuals in 2020 and assumptions Compliance Period 4 than the 2020 RPS Procurement Plan.

VCE bases its annual procurement targets and strategy on the most likely load scenario using the best available information at the beginning of the year. VCE monitors actual load throughout the year, adjusting the load forecast when major changes are observed or anticipated. In addition to using an established load forecast as the base case for procurement targets, VCE also models other possible load scenarios under variable conditions to ensure it can meet its procurement targets over a variety of probable cases. Where it makes sense financially for VCE's customers and does not put VCE at additional economic risk, VCE will over-procure to ensure it still meets its obligations under various probable scenarios.

Due to the automatic opt-in nature of CCA programs, VCE faces more exposure to downside risk in its load forecasting than it does to under-forecasting. VCE has a relatively low opt-out rate,

hence it uses a higher initial starting point for the load forecast to drive procurement targets. Therefore, VCE's compliance metric is more likely to be impacted by load drop from opt-outs than it is from unexpected load growth. A decrease in load does not pose a risk to VCE's RPS compliance, since reducing load will, holding all other variables (such as quantity of renewables procurement) constant, result in a higher portion of VCE's retail sales coming from renewable energy.

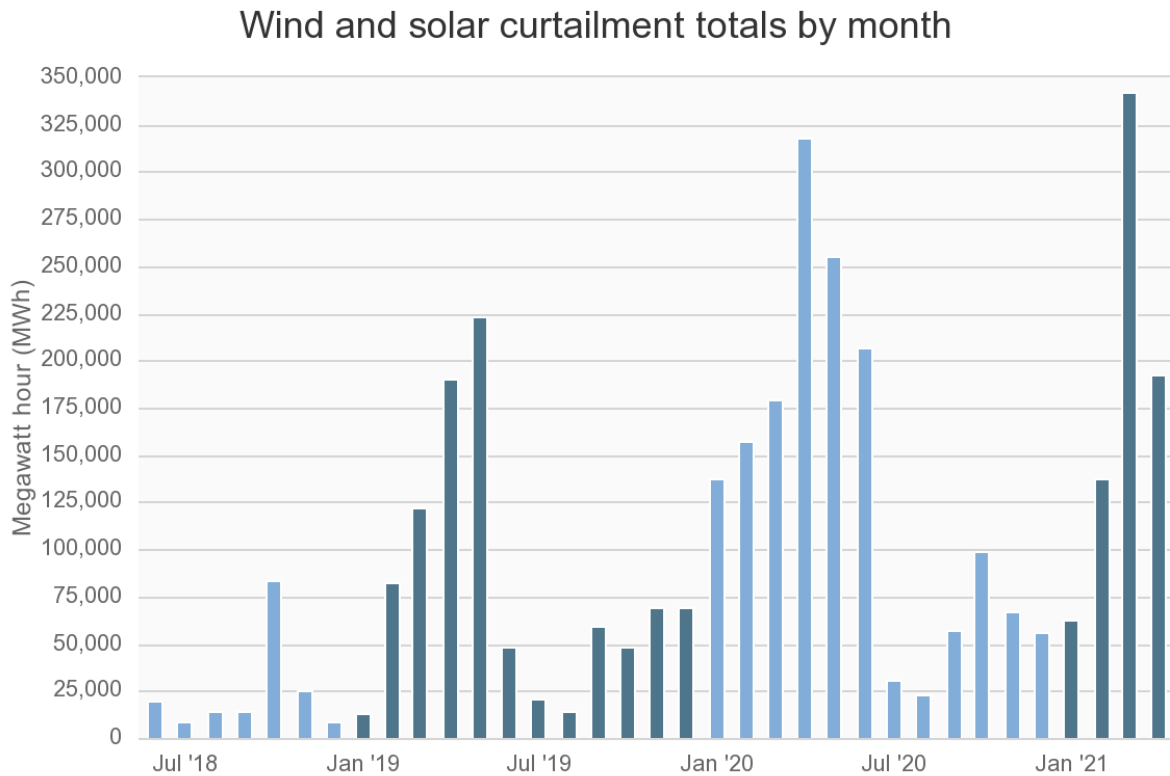
To manage the risk of load loss from customer opt-outs, VCE utilizes enhanced customer relationship management and marketing. VCE incorporates load growth from service territory expansion into its Implementation Plan update process as well as the annual load forecast update, which allows load growth to be incorporated into its Plan in a timely manner. VCE feels comfortable that it has accounted properly for load variance effects on its ability to meet RPS compliance requirements through the following measures:

- 1) VCE accounts for a variety of load scenarios.
- 2) VCE continually monitors and adjusts its load forecast.
- 3) VCE has measures in place to manage some of its load deviation.
- 4) VCE is at more exposure to lower than expected load than it is to higher than expected load.
- 5) VCE procures above the RPS minimum requirements.

### **Curtailment**

The rising supply of non-dispatchable, minimal variable cost generation on the grid has led to an increasing trend of curtailments of these renewable resources in the CAISO as demonstrated in Figure 1 below.

**Figure 1. CAISO Wind and Solar Curtailment**



Source: <http://www.caiso.com/informed/Pages/ManagingOversupply.aspx>

VCE’s RPS compliance can be put at risk if the resources from which it has procured renewable generation are curtailed. VCE has taken into consideration the potential for its renewable generation resources to be subject to these trends when planning its procurement. These trends are studied on an aggregate level using historical curtailment data from the CAISO. On an individual resource level, VCE studies historical and projected negative pricing events based on technology type, location, interconnection queue, and possible transmission constraints, before incorporating resources into its generation supply. Assumptions and projections of these trends are considered in the modeling of VCE’s resource portfolio when assessing its ability to meet its renewables goals.

To help control these risks on an aggregate level, VCE along with other retail sellers, can promote load modification programs such as electric vehicle adoption, building electrification, demand response, time-of-use rates, and improved regional coordination in the energy markets. For example, VCE is working with a demand response partner to establish an agricultural demand response pilot program in VCE’s territory. Additionally, VCE has incorporated energy storage

technologies as part of its resource portfolio to mitigate potential renewable resource curtailment impacts. VCE incorporates curtailment clauses in its contracting of renewable resources to minimize exposure to extreme negative pricing events. These curtailment assumptions are built into its modeling when assessing its ability to meet renewables percentage targets and are accounted for in the RNS template.

### Project Development Delays

As with all new build resources, there is the potential for delay from numerous development-related risks. VCE attempts to minimize risks such as interconnection, permitting, and site control delays by being very selective in its solicitation process. For example, in its first two solicitations for long-term renewables, VCE chose to focus on and applied higher value to later stage, earlier-COD projects. VCE believes the selected projects reflect the best combination of many factors, with a heavy emphasis on the development stage to reduce the potential for delayed development.

The COVID-19 pandemic has been disruptive to the supply chain; however, it ~~has not had a significant impact at this point on the progress of VCE's renewable project development. A only impacted one of VCE's renewable project developments. VCE received official notice of delay on the Putah Creek Energy Farm project and Aquamarine project. The Aquamarine developer experienced a delay of start of construction, which had no impact to the guaranteed COD. Aquamarine achieved COD two days ahead of schedule. The Putah Creek Energy Farm project COD is delayed by approximately 8 months due to a delay in receiving the BESS. Putah Creek is proceeding with a path to energize the PV field, with hopes to energize in Q2, prior to energization of the BESS. Similar supply chain delays are not anticipated on VCE's other other contracts. Further~~ disruption in the supply chain would be the most difficult to mitigate and represents the largest threat to VCE meeting its RPS requirements. VCE's suppliers are obligated to provide regular reports on development progress and potential issues. Other examples of such pandemic-caused risks include local building department permitting, interconnection certification, or transmission network upgrade delays. ~~To date VCE has received official notice of delay on the Aquamarine project. The developer experienced a delay of start of construction, which has no impact to the guaranteed COD.~~ VCE's risk management approach includes using the guaranteed COD date to model expected volumes; therefore, this delay does not change the project's forecasted delivery volume in Compliance Period 4. VCE is closely monitoring the status of all

projects and working with its developers to stay on top of any potential issues in order to react accordingly.

VCE's objective is to contribute to California's renewables goals by contracting for new-build renewable resources. Should there be force majeure-level impacts to VCE's contracted-for projects under development, this could impact VCE's ability to meet its RPS requirements, since a large percentage of its long-term contract requirements and PQRs are expected to be met by these projects. Under extreme circumstances, VCE may consider additional purchases of renewable energy from existing resources or short-term RECs to supplement its power supply. As an update to its Final 2020 RPS Procurement Plan, ~~VCE's~~VCE's 2021 RNS Template now shows 60,000 MWh RECs from Expiring RPS Contracts in 2021, which reflects short-term REC purchases that VCE ~~is planning to make~~made in 2021 to contribute towards its Compliance Period 4 obligations. VCE also maintains contact with many developers on an on-going basis should the need arise to contract for replacement projects. VCE has demonstrated its ability to move quickly on replacement procurement through the six-month contracting duration of the Resurgence Solar I project.

**~~7~~VII. Risk Assessment - § 399.13(a)(5)(F) (ACR § 5.7)<sup>5</sup>**

VCE considers many factors in assessing risk in its RPS portfolio, including load variance, project development delays, supply chains, curtailment, supply/demand in the market and costs. In assessing risk, VCE takes into account lessons learned from other retail sellers over the history of the RPS program, as well as its own experience in procurement thus far. The most relevant risks are described in Section 6 above, along with respective mitigation strategies. Currently, no known or certain project risks such as transmission, permitting or financing are projected to stall the guaranteed COD for ~~any of~~ VCE's contracted-for facilities under development, with the exception of the Putah Creek Energy Farm delay described above. Development risks are more challenging to forecast, quantify and assess using a modeling approach. The impact of these risks tends to be more binary. VCE's assessment of development delay is discussed further in Section 9.B. under MMoP Scenarios. VCE's current approach to modeling of risks reflects its position as a newer retail seller with a less developed RPS portfolio.

## **Compliance Risk**

VCE incorporates multiple compliance risks through its use of a Project Viability Calculator (PVC). VCE's calculator is based largely on the Commission's PVC, with minor modifications tailored to CCA procurement. Each project is rated on criteria including Technology, Developer Experience, Site Control, Permitting Status, and Interconnection Progress. The project's score on each criteria is multiplied by the weight assigned to the criteria to calculate an overall Risk Adjustment Score. The Risk Adjustment Score is multiplied by the project's expected quantities to across the entire contract term. By derating the expected quantities, VCE is incorporating the factors that contribute to compliance risk. VCE actively monitors development progress and maintains contingency plans to adapt where needed.

Using its risk analysis model, VCE determined the COD for all long-term projects under contract with VCE could be delayed until six months after the guaranteed COD date before VCE is at risk of not meeting its long-term requirement for Compliance Period 4 (2021-2024). To manage this risk, VCE is closely monitoring the development status of its contracted-for long-term projects under development. Depending on the type of delay that might be introduced, VCE plans on supplementing its portfolio with additional short-term purchases from existing renewable resources and, if necessary, long-term commitments as well.

Under scenarios where one of the two large projects under contract with VCE completely fails to deliver, VCE would need to execute a replacement long-term contract of larger size with deliveries before 2024 to maintain compliance with the 65% long-term contracting requirement. The quantity of deliveries required to meet the shortfall with these extreme cases range between 106,000 to 222,000 MWh for Compliance Period 4. The volumes depend on which, how much, and when the project failures could occur. VCE has not yet examined future compliance with the same level of detail as it has for Compliance Period 4. This is because there is more time to react, and expected volumes in later compliance periods would be impacted by any replacement procurement action taken in Compliance Period 4.

In response to the ACR's direction to retail sellers to include a discussion of resource availability risk,<sup>6</sup> VCE notes that its existing long-term contracts, which are currently for solar-only and solar

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<sup>6</sup> ACR, p. 20.

plus storage resources, do not face this risk to the same degree as other renewable resources like hydro and biofuels. To the extent VCE relies on such resources in the future to meet its RPS compliance obligations, it will appropriately consider those risks at that time.

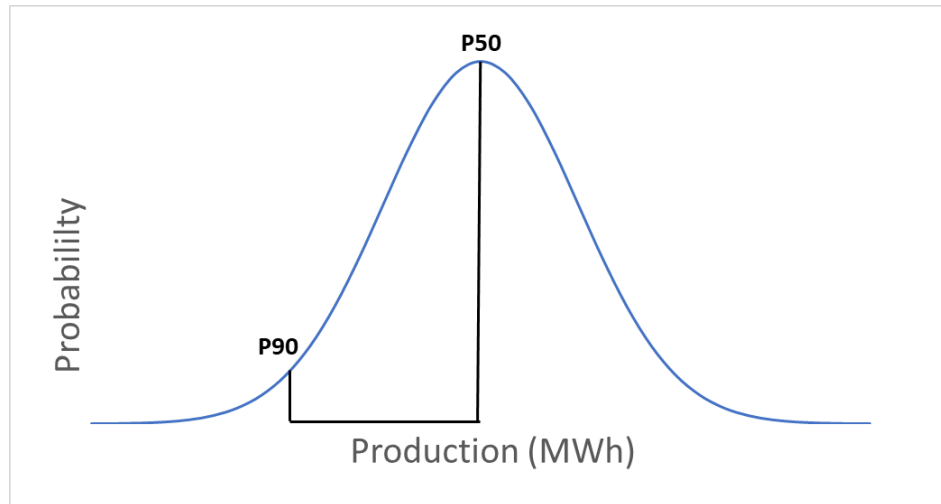
### **Risk Modeling and Risk Factors**

VCE's portfolio of resources is not as developed as those of other more mature retail sellers. This provides the opportunity to optimize its portfolio from the ground up according to current market and regulatory dynamics, without the drag of possibly outdated assumptions and commitments. This also makes VCE relatively more susceptible to development risk than to variability in generation volume. As such, VCE is more concerned with risks that are somewhat more binary such as project failure and delayed COD.

If VCE's portfolio were more mature and closer to fully procured with online resources, a robust stochastic model incorporating multiple possible delivery scenarios within a statistical confidence interval would be more appropriate. To assess the energy yield of its unit contingent PPAs, VCE relies on the developer's studies and expectations. For assumptions in planning, VCE uses a range of "P90" to "P50" production exceedance scenarios. The P50 scenario represents the middle or best estimate of a facility's generation – i.e., there is a 50% chance production will exceed the estimate, and a 50% chance production will be below the estimate. The P90 scenario provides a more conservative estimate under which the facility's production is expected to exceed the estimate 90% of the time. These two estimates are illustrated in the normal distribution curve shown in Figure 2.



**Figure 2. Production Probability Curve**



Using the P50 to P90 production exceedance scenarios for risk assessment purposes represents a more conservative approach to the energy delivery estimates. VCE feels this is appropriate since VCE does not yet have long-term contracted resources that are already online and is more risk-averse to under-delivery scenarios than it is to over-delivery. If VCE were targeting minimum RPS compliance obligations, it would be more suitable to use ultra conservative estimates closer to P90 scenarios in its planning to increase the likelihood of meeting the minimum requirements at the expense of over-procurement. Since VCE's targets are well above RPS minimums, the use of higher production assumptions ensures the risk of over-procurement is balanced along with under-procurement. This minimizes the possibility of unintentionally taking a longer position than planned.

Another consideration as to which production scenarios to use is the number of resources and technology types in the portfolio. For an organization that has multiple resources, using assumptions closer to P50 production makes more sense because of diversification benefits. In assessing its risk of meeting the RPS program and its own requirements, VCE strives to achieve a balance that has a high probability of meeting its targets without adding portfolio risk and higher costs to its customers. At this time, VCE feels using assumptions in the P90 to P50 range of production is suitable for its portfolio maturity. These assumptions will adapt according to how VCE's resource mix evolves over time.

To reduce the risk of under-delivery, VCE incorporates guaranteed energy production clauses in its long-term PPAs. This protects the integrity of the production studies that VCE relies on for planning purposes. Short-term contracts are mainly structured with defined and guaranteed quantity delivery and period.

VCE's ability to meet RPS requirements relies more on the certainty and timely development of its long-term renewable resources under development than it does on the variation of actual generation deliveries. Because of this, VCE chooses to focus more of its risk mitigation efforts on the potential impact of project development delays. VCE incorporates guaranteed COD clauses in its long term PPAs. Guaranteed CODs come with financial penalties for failure to achieve the COD, which make them more conservatively-estimated commitments. For planning purposes, VCE uses guaranteed CODs as the basis for its assumptions when assessing its risk of RPS compliance. As mentioned in Section 6, VCE also focuses more on and applies higher value to later-stage projects in its initial procurement efforts to minimize the risk of project delays.

With a focus on project development risk, VCE approaches its risk assessment by calculating its ability to meet RPS requirements under the worst-case scenario to understand when it must pursue alternative options to maintain compliance. For example, two of the projects with which VCE has contracted have had COD dates in 2021. VCE uses models incorporating RNS methodologies to calculate the longest delay in COD it could tolerate before violating the 65% long term requirement required pursuant to Pub. Util. Code Section 399.13(b). In this scenario, contractually guaranteed volumes are used as assumptions for future deliveries instead of expected volumes.

VCE incorporates risks related to load uncertainty, as discussed in Section 6, by including a Voluntary Margin of Overprocurement that is 5% of the PQR. VCE monitors actual load throughout the year, adjusting the load forecast when major changes are observed or anticipated. In addition to using an established load forecast as the base case for procurement targets, VCE also models other possible load scenarios under variable conditions to ensure it can meet its procurement targets over a variety of probable cases. Where it makes sense financially for VCE's customers and does not put VCE at additional economic risk, VCE will over-procure to ensure it still meets its obligations under various probable scenarios.

## **System Reliability**

While VCE does not perform risk assessments on the grid itself, it relies on guidance from the Commission and studies from the CAISO to evaluate how overall system reliability should be factored into VCE's procurement planning. Based on this, VCE is aware of the need for resources other than stand-alone solar to address long-term concerns around effective load carrying capability ("ELCC") studies of renewables and the retirement of traditional resources such as natural gas and nuclear generation. While VCE's main focus is on maximizing value to its customers, it understands that reliability is critically linked to the RPS planning process. As described in more detail in Section 4, VCE contributes to overall system reliability by working to align its supply and demand as best as possible across its entire electric portfolio to minimize the time periods where VCE is forced to take a speculative position in the market. VCE will continue to evaluate additional resources, such as battery and long-duration energy storage technologies, as well as other types of renewable resources, such as baseload resources, to ensure a balanced portfolio that contributes to overall grid reliability. VCE's recent procurement of three storage-integrated resources, as well as its prior procurement from a small hydro project, demonstrates its commitment to procurement in a manner that is aligned with overall grid reliability. Portfolio optimization, diversity, reliability and lessons learned as discussed in Section 4 all contribute to the shaping of VCE's risk assessment.

## **Lessons Learned**

VCE's lessons learned regarding risk management include both lessons that VCE has learned directly through procurement experience, and lessons that VCE has observed from other LSEs. VCE is particularly focused on lessons applicable to LSEs with a small physical footprint, and on how the increasing penetration of renewable generation impacts its overall procurement strategy.

### *Contingency Plans*

Through experience, VCE has confirmed the importance of having contingency plans to address the potential risk scenarios incorporated in its modeling. It is equally important to have a strategy to address the risk as it is to recognize the risk. After one of the projects VCE had signed a PPA with was terminated, VCE quickly executed on its mitigation plan and pursued its replacement to avoid delay in meeting RPS requirements. The ability to respond quickly and adjust the procurement process was key to being effective at responding to such contingencies. Had VCE

been required either internally or by regulatory requirements to follow a more rigid and formal protocol, VCE might not have been able to address this in a timely manner.

### Diversification

Learned through the experience of other LSEs is the importance of having a diversified, risk managed approach to procurement. While VCE along with many other entities have ambitious renewable energy goals, it is prudent to balance that with avoiding putting VCE customers at risk of being stranded with long term commitments for resources that may become outdated or uneconomic. Larger and earlier adopters have had to bear this burden and pass these costs on to customers.

### Coordination

As the mix of generation resources on the grid evolves, VCE has observed its impact on energy markets and operations. For example, the increase in solar has created issues related to the “duck curve” and serving the net peak, introducing new challenges to grid operations. As the market becomes more fragmented with load migration, it will be important to coordinate with other LSEs and have regulatory agencies provide higher level guidance to all LSEs in order to avoid exacerbating these issues or creating new ones. All participants must work together to minimize adverse effects and ensure customers benefit collectively.

## **VIII. Renewable Net Short Calculations - §§ 399.113(a)(5)(A), (D), and (F) (ACR § 5.8)**

To inform future procurement planning, the standard RNS template was used to calculate VCE’s RNS position through 2030. The built-in methodologies in the RNS template were used with the following data assumptions:

- Retails Sales are based on the most current internal load forecasts.
- Guaranteed fixed delivery contracts were entered without any adjustments to failure rate.
- Quantities for Risk-Adjusted RECs from Online Generation are based on P50 scenarios, without further risk adjustment.
- Quantities for Risk-Adjusted RECs from Facilities in Development are based on P50 scenarios, then risk adjusted using a Project Viability Calculator. VCE’s calculator is based largely on the Commission’s Project Viability Calculator, with minor modifications tailored to CCA procurement. Each project’s viability score is used to adjust expected

quantities across the entire contract term. The Project Viability Calculator methodology is described in further detail below.

- Start dates for delivery from Facilities in Development are based on the later of the Guaranteed COD or Expected COD.
- Anticipated quantities for future solicitations are not incorporated.
- A two step Voluntary Margin of Overprocurement (~~VMePVmoP~~) is included. For Compliance Period 4, the ~~VMePVmoP~~ is in line with VCE's internal target to reach 42% of its electricity supply from eligible renewable energy sources, with a load volatility margin of 5% of the internal target. In later compliance periods, VCE's ~~VMePVmoP~~ is calculated as 5% of the PQR, to account for potential variances in load.

**Table 57. Project Viability Calculator**

Point Value	Technology	Developer Experience	Site Control	Permitting Status	Interconnection Progress
100	Will use commercialized technology that is nearly identical to technology in use at a minimum of 2 operating facilities of similar or larger capacity	Developer has demonstrated experience developing renewable projects of similar size and technology	Full control of site/land <u>and</u> right of way for gen-tie line	Received permit from lead permitting agency and all other permits from secondary agencies	Project has posted 3 <sup>rd</sup> Interconnection Financial Security (IFS) at start of construction activities
90	Will use commercialized technology that is currently in use at a minimum of 2 operating facilities, but at first-of-its-kind scale	Developer has demonstrated experience developing renewable energy projects of similar size OR technology	Full control of site/land <u>or</u> right of way for gen-tie line	Received permit from lead permitting agency, but has not received secondary permits	Project has executed a GIA and posted 2 <sup>nd</sup> IFS
75	Project will use components of commercialized technology, but in an application that has not yet been commercially proven	Developer has demonstrated experience developing renewable energy projects	Partial control of site/land <u>or</u> right of way for gen-tie line	Filed for permits / under review by lead permitting agency	Developer has posted 1 <sup>st</sup> IFS and phase II study or equivalent study in progress
50	Technology is not commercially proven	Developer has no demonstrated experience developing energy projects	No control of site/land or right of way) for gen-tie line	Not filed for permits with lead permitting agency	Developer has submitted a interconnection request and phase I study or equivalent study in progress

Each project is assessed against the five criteria listed in Table 5 to determine its score in that category, with a score range between 50 and 100 out of 100. The category score is then multiplied by the weight of that criteria to develop a Risk Adjustment Score. See example Risk Adjustment Score in Table 6.

**Table 68. Example Risk Adjustment Score Calculation**

Criteria	Score	Weight	Weighted Score
Technology	100%	10%	10%
Developer Experience	75%	15%	11%
Site Control	100%	25%	25%
Permitting Status	75%	25%	19%
Interconnection Progress	50%	25%	13%
<b>Risk Adjustment Score</b>			<b>78%</b>

VCE appreciates the Commission’s direction that retail sellers use their internal risk analyses to make appropriate adjustments to their RPS procurement planning. This recognizes that each LSE is unique and that a generally applied risk-adjustment method is not as effective. For VCE, the use of P50 scenarios in its RNS calculations for expected deliveries, and application of the project viability score, represent a conservative expectation for risk-adjusted volumes. In addition, VCE’s adjustments to expected quantities include the following:

- Using the more conservative start dates for COD to account for potential development delay risk.
- Applying an escalating curtailment rate to VCE’s solar-only project, averaging 5% across the 10 year period.
- Reducing quantities for the solar plus storage projects by the battery round trip efficiency.

Analysis and mitigation strategy for further project delay or failure is discussed in Section 7.

RNS calculations currently show VCE will require minimal additional procurement in Compliance Periods 4 and 6 to meet minimum RPS requirements. These quantities are shown in the Annual Gross RPS Position row in the attached RNS template. If no delays occur to facilities still in development, these minimal quantities can be purchased as needed from short-term contracts of existing resources and the 65% long-term contracting requirement will still be met. All volumes from RPS facilities in development are from 10-year or longer contracts. Since quantities accounted for in the RNS template represent P50 scenarios multiplied by the project viability score, there is also the possibility that these minimal quantities end up being covered if actual generation exceeds the risk-adjusted generation forecasts.

The quantitative progress made towards RPS requirements is listed in the RNS template under “Annual Gross RPS Position.” This demonstrates VCE exceeded its PQR for Compliance Period 3 by approximately 243,000 MWh and is approximately ~~9398~~,000 MWh shy of reaching its PQR for Compliance Period 4 and 171,000 MWh short for Compliance Period 6 with the current executed RPS contracts. For Compliance Period 4, the actual COD of the current projects in development will have an impact on the Gross RPS Position. VCE’s internal target is currently 42% renewables for Compliance Period 4 during this procurement planning period and will evolve as conditions warrant. With the ~~MMoPMmoP~~ discussed in Section 9 added to the RNS calculations, VCE is targeting the procurement of at least an additional ~~240182~~,000 MWh to the current contracts for Compliance Period 4 and 240,000 MWh for Compliance Period 6.

In general, VCE’s approach to RPS procurement planning is to apply a relatively higher priority to action towards an identified need in the nearer term. The long-term planning horizon allows VCE to anticipate the need for additional procurement efforts in future years as well as recognize how procurements in the earlier time periods affect the future. While the planning horizon is for 10 or more years, VCE recognizes that the further out the time period, the more it is subject to deviation from forecasts. Unforeseen changes in policy, technology, and trends could alter procurement plans drastically. This is the reason why, as discussed in Section 4, maintaining portfolio flexibility is extremely important. Thus, the focus of VCE’s recent solicitations was mainly to address identified needs for Compliance Periods 4 and 5 based on RNS calculations and VCE’s internal targets. Procurement requirements for Compliance Period 6 will be addressed in future solicitations. These future solicitations will evolve and be influenced by updated forecasts and circumstances.

#### **IX. “Minimum Margin” of Procurement - § 399.13(a)(4)(D) (ACR § 5.9)**

VCE recognizes that retail sales do not always fall exactly in line with forecasts nor do renewable resources always deliver the exact quantities forecasted. As such, a minimum margin of over-procurement (“~~MMoPMmoP~~”) must be incorporated to ensure that RPS requirements are still met with a degree of certainty.

Historically, VCE has applied a volumetric cushion of 5% additional REC purchases on top of its already higher-than-RPS minimum internally-set requirements. This higher number was used to mitigate many of the uncertainties associated with the launch of a new CCA program. This resulted



in over-procurement of short-term, fixed quantity, RPS contracts for Compliance Period 3 as shown in the RNS template. For the 2021 RPS planning process, VCE is now in a different portfolio position due to its execution of four long-term projects currently under development that will be incorporated through the 10-year planning period.

Table 7 below shows the margin of RPS over-procurement based on the differential between the SB 100 and the VCE procurement targets.

**Table 7. Margin of RPS Over-Procurement**

RPS Content Goals	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
SB 100 RPS Target (as a percentage of retail sales)	35.8%	35.8%	41.3%	44.0%	46.7%	49.3%	52.0%	54.7%	57.3%	60.0%
VCE RPS <del>VMoPVmoP</del> (as a percentage of retail sales)	- <del>25.322</del> 6%	- <del>9.419.3</del> %	<del>26.014</del> 4%	<del>23.238</del> 9%	N/A	N/A	N/A	N/A	N/A	N/A
VCE RPS <del>VMoPVmoP</del> (as a percentage of PQR)	N/A	N/A	N/A	N/A	5%	5%	5%	5%	5%	5%
VCE RPS <del>VMoPVmoP</del> (MWh)	<del>116,783</del> 84,460				56,888			68,995		
VCE RPS <del>MMoPMmoP</del> (MWh)	<del>140</del>	<del>14072</del>	<del>33,397</del> 20,642	<del>35,262</del> 21,998	<del>34,987</del> 21,826	<del>34,810</del> 21,715	<del>34,633</del> 21,605	<del>34,552</del> 26,694	<del>34,279</del> 26,482	<del>34,102</del> 26,345
VCE RPS <del>MMoPMmoP</del> (MWh)	<del>68,799</del> 32,559				<del>404,430</del> 65,146			<del>402,933</del> 64,213		

### IX.A. Minimum Margin Methodology and Inputs

As part of its ~~MMoPMmoP~~ methodology, VCE is incorporating safety margins into its renewable generation forecast to adjust for the variability inherent in new construction and renewable generation. VCE has incorporated multiple measures to ensure it meets its RPS compliance obligations. VCE has incorporated a Voluntary Margin of Overprocurement (“~~VMoPVmoP~~”) in the RNS template, using the following methodology:

- For Compliance Period 4, VCE set an internal target of 42% renewable with an additional load volatility margin of 5% of the internal target, resulting in an overprocurement target that is 9.3% of VCE’s PQR.
- For Compliance Period 5 and 6 VCE is adopting a ~~VMoPVmoP~~ of 5% of the PQR for each Compliance Period.

VCE has observed historical load variances within 5% of the weather normalized load forecast; therefore, VCE believes this ~~VMoPVmoP~~ method will comfortably ensure VCE meets its RPS compliance obligations. VCE is taking a Compliance Period view of procurement, particularly during Compliance Period 4, when VCE is in a critical transitional period of new long-term

resources coming online. The negative VMoPVmoP shown in 2021 and 2022 acknowledges that much of VCE's Compliance Period 4 renewable delivery will be from projects coming online later in the Compliance Period.

In addition to the VMoPVmoP, VCE is incorporating a MMoPMmoP by risk adjusting the expected volumes from its in-development resources. As VCE's supply portfolio matures, its MMoPMmoP methodology will adapt accordingly. The inputs that drive VCE's amount of MMoPMmoP revolve around:

- The certainty of risk-adjusted deliveries from facilities in development. The higher the certainty, the lower the MMoPMmoP. The certainty depends on the technology type, developer experience, site control, permitting status, and interconnection progress. The forecasted failure rate for RPS Facilities in Development is based on VCE's Project Viability Calculator. VCE's calculator derives largely on the Commission's Project Viability Calculator, with minor modifications tailored to CCA procurement. Each project's viability score is used to adjust expected quantities across the entire contract term.
- The balance of online versus in development resources delivering VCE's expected volumes during the compliance period. VCE's Compliance Period 3 RPS volumes were primarily contracted from fixed volume REC contracts. A 0% forecasted rate of failure was applied for all fixed volume contracts. VCE's remaining contracted deliveries from online resources are from a small hydro project. The contract expected quantity was developed by averaging 18 years of historical generation data, from 2000 to 2018. The historical data ranged from 0 to nearly 20,000 MWh per year and covered drought conditions, wildfire risk, and transmission contingencies. Due to the project's small volume relative to VCE's portfolio, VCE believes the use of this historical data set sufficiently captures the inherent risk in the expected quantity. Therefore an additional failure rate was not applied to online generation. As VCE's portfolio develops with additional resources coming online in the next three years, we will explore developing a more robust approach to modeling online generation failure rate, such as multi-variable stochastic modeling.
- The number of years left in the compliance period before it ends. For example, the MMoPMmoP would be larger for Compliance Period 4 in the 2022 planning process versus 2020 if there were still remaining procurement required in 2022. VCE is not applying an

additional risk margin in the 2021 planning process due to the remaining time in the Compliance Period.

Since VCE is in the early stages of planning for Compliance Period 4 and the executed contracts for projects in-development are for solar and solar plus storage, which have predictable output, and VCE's online small hydro generator delivers consistent volumes, the ~~MMoP~~MmoP in Compliance Period 4 is minimal at approximately ~~6932~~,000 MWh. The risk adjustment percentage resulting from VCE's Project Viability Calculator is reflected in row Fbb of the RNS template. Since this ~~MMoP~~MmoP derives from the viability of in-development projects, the failure percentages are expected to drop as project development progresses. The quantities of targeted procurement with ~~MMoP~~MmoP built-in are detailed in Section 8 under RNS calculations.

VCE's overprocurement target is achieved by a combination of two factors in procurement planning: (1) the conservative estimates used in online delivery date and volumetric generation for supply forecasts; and (2) VCE's higher internal renewable energy procurement targets. For example, while the RPS requirement for Compliance Period 4 is 40% by default, VCE's Plan is currently based on an internal renewable energy target of at least 42%. This target could vary depending on factors such as customer preference, the market for renewable, and economic conditions. The higher-percentage target used for procurement planning combined with conservative, low-side biased forecasts for generation equates to a procurement plan with a safety margin built in. As a result, VCE will be targeting procurement of at least ~~240182~~,000 MWh of additional renewable energy for Compliance Period 4 to reach its 42% target. This will be acquired through short-term renewable energy purchases.

As the contracted projects approach their COD, the procurement plan will be revisited for adjustments as necessary. As VCE gains more experience and stabilization around assumptions for load forecast and supply availability, the method for building in a ~~MMoP~~MmoP will be refined further.

### **IX.B. Minimum Margin Scenarios**

As part of the RPS procurement planning process, VCE has developed a worst-case scenario analysis. The objective of this is to stress test the renewables delivery and online date assumptions against RPS requirements. This stress test is focused on Compliance Period 4 because it is closest

in time and depends on critical milestones. VCE has more time to react and adjust its strategy for future compliance periods. Procurement needs for such future periods will also be affected by the outcome of VCE's current and subsequent procurement efforts.

For the stress test, CODs for contracted-for facilities under development are pushed forward until the 65% long-term requirement is no longer met. This establishes the absolute critical online date that the projects must achieve before other significant actions are required. Minimum expected volumes are used as delivery assumptions following the delayed delivery dates to maintain principles of ~~MMoP~~MMoP. Short-term contract purchases are assumed to make up the shortfall volumes and maintain overall RPS compliance.

Based on this analysis, VCE can tolerate a delay of up to six months in all project guaranteed COD dates and still meet its 65% long-term requirement. This extreme scenario would require the purchase of an additional 273,000 MWhs under short-term contracts between 2021 and end of 2024 to meet VCE's PQR for Compliance Period 4. Additional scenarios on partial failure of facilities under development are discussed in Section 7. These sensitivity and scenario analyses contributed to the ~~MMoP~~MMoP methodology that is incorporated into VCE's RPS Procurement Plan. The ~~MMoP~~MMoP is built into the RNS in Section 8 by risk adjusting the expected volume from each in-development project, based on the project's individual Project Viability Score. The "risk-adjusted deliveries from facilities in development" therefore represents lower quantities than those expected from the in-development projects once they are online. Additionally the RNS template reflects VCE's ~~VMoPVmoP~~VMoPVmoP, targeting 42% renewable for Compliance Period 4 instead of the 40% in the template.

VCE is prepared with a plan to manage these ~~p-otential~~potential risks. Development status will be monitored monthly for these projects. Depending on the severity and timing of these potential impacts, VCE is prepared to take other actions to ensure its portfolio will still be compliant. For example, VCE has options for additional volumes that can be exercised. A list of non-binding back-up offers can also be accessed. Procurement of additional projects on top of what was originally contracted from the local renewables solicitation can be added as well.

**X. Bid Solicitation Protocol, Including Least-Cost Best-Fit (LCBF) Methodologies - § 399.13(a)(5)(C), D.04-07-029, D.11-04-030, D.12-11-016, D.14-11-042, and D.16-12-044. (ACR § 5.10)**

Consistent with PUC Code §399.13(a)(5)(C), in its 2018 IRP and the Action Plan contained therein, VCE issued a solicitation on August 13, 2018, to obtain renewable energy under long-term PPAs. This solicitation requested proposals from existing or proposed renewable projects located in California. Because this was VCE’s first solicitation, and VCE did not have any long-term renewable supply at the time, the solicitation did not specify targeted quantities or capacities that would be contracted for. VCE procured 122 MW of long-term contracts for solar PV from this solicitation, including a 50 MW project and a 72 MW project. Shortly after execution of the 72 MW PPA, the counterparty failed to satisfy a significant provision of the PPA, resulting in termination. VCE engaged multiple reputable developers to identify replacement project opportunities ranging in size from 50-100 MW. After conducting evaluations, a 90 MW solar plus 75 MW storage project was selected to replace the terminated solar-only PPA.

On April 20, 2020, VCE released a local renewables RFO targeting projects with capacity between 2 ~~MW~~aeMwac and 24 ~~MW~~aeMwac and a COD date on or before December 31, 2023, located in Yolo County or one of the six adjacent counties. Fourteen proposals were received by the May 26, 2020 submittal deadline. Following the evaluation of the offers, two solar plus storage PPAs, totaling 23 MW solar plus 9.5 MW storage capacity, were signed in November 2020. The remaining need of 210,000 MWh in Compliance Period 4 will be filled through short-term purchases.

VCE only considers projects that are deliverable into the CAISO and that can demonstrate Full Capacity Deliverability Status in accordance with the CAISO tariff. VCE’s renewable energy solicitations are open to all types of eligible renewable energy with emphasis on projects that also support overall grid reliability to the extent such projects also are cost-effective. VCE also encourages battery storage to be offered together with wind and solar resource offers in order to increase resource diversity and further enhance the RA value and reliability of the energy from VCE’s RPS portfolio, and to further align its load and supply.

In April 2020, VCE and Redwood Coast Energy Authority (“RCEA”) released a joint solicitation for incremental resource adequacy (“RA”) to further their contributions to the reliability of the

California power grid and to fulfill their procurement obligations pursuant to D.19-11-016. The solicitation resulted in VCE PPAs for 7 MW of demand response capacity and 5 MW of battery storage capacity, signed in September 2020. In addition, VCE is currently participating in ~~a solicitation~~ solicitations for long duration storage and clean firm power through CC Power.

#### **X.A. Solicitation Protocols for Renewables Sales**

At this time, VCE does not anticipate needing to sell renewables from its portfolio and has therefore not developed any protocols for renewables sales.

#### **X.B. Bid Selection Protocols**

VCE's solicitation process includes the following steps:

1. Issue solicitation;
2. Receive Notice of Intent to Bid;
3. Receive proposals;
4. Screen proposals for meeting minimum criteria;
5. Evaluation and ranking of proposals passing the initial screen;
6. Selection of proposals for short list consideration;
7. Short list evaluation/selection of proposals for negotiation;
8. Notification to short list entities;
9. Negotiate and execute letter of intent/commercial terms sheet;
10. PPA negotiation; and
11. PPA execution.

The public website where materials can be found regarding VCE's past RFOs is: <https://valleycleanenergy.org/solicitations-rfps/>.

#### **Bid Selection Process and Evaluation Methodology**

VCE's 2020 RFO evaluated proposals with the goal of acquiring local renewables under long-term contract that combined two factors: (1) have the greatest likelihood of reaching commercial operation within the timeframes needed to meet the VCE's RPS objectives; and (2) provide the "best-fit" attributes for VCE's portfolio that ensure a balanced resource mix to maintain the reliability of the electrical grid while minimizing costs and maximizing value to VCE's customers.

VCE will consider equity and impacts to economically and environmentally disadvantaged areas in future solicitations that encompass a larger footprint. This was not a significant criterion for the 2020 solicitation as there are no disadvantaged communities within VCE's jurisdiction.

Besides the direct comparison of contract terms and price among competing offers, VCE compares qualitative elements which it deems to be important for a successful project. VCE's specific bid selection criteria and further details on VCE's evaluation methodology are detailed in Section 10.C below.

### **X.C. LCBF Criteria**

VCE's future bid selection criteria will include a number of qualitative items deemed to be important for a successful project, including:

- Project team experience;
- Financing plan and financial stability of project owner/developer;
- Local/Regional resources location;
- Prior land use;
- Located in pre-screened energy development areas (avoid RETI Category 1 or Category 2 designated areas);
- Level of completeness of permits;
- Grid interconnection status;
- Site control;
- System reliability;
- Energy and capacity value;
- Congestion cost;
- Potential for curtailment;
- Operational flexibility;
- Planned land use at retirement and disposal of materials;
- Multi-benefit renewable energy (e.g. pollinator-friendly site, re-purposed agriculture use, research attributes, etc.); and
- Labor practices, including a prevailing wage requirement.

VCE applies LCBF in its selection criteria as follows. There are three components to this part of the evaluation process. They include evaluating projected market-based value, overall best fit with VCE's portfolio, and viability.

### **Economic Value**

Each offer is first evaluated on a standalone basis. The project's cost is measured against the expected value in the market based on its generation profile and dispatch characteristics. The lower its price is in relation to its determined market value, the higher it is ranked. The market value can include forecasted energy, resource adequacy capacity, ancillary services, option, and arbitrage values depending on the resource type and what it qualifies for. These market values are calculated using historical trends, forward pricing, and generation profile. Any dispatchability, curtailment, option, or arbitrage capabilities of the resource are captured and evaluated. Basis risk between the offer's point of delivery and the Default Load Aggregation Point ("DLAP") or trading hub is also considered in determining its net economic value. This is a function of congestion costs and losses associated with the location of the resource. Please see Sections 12 and 13 below for more information on how VCE analyzes congestion costs and curtailment risks within its portfolio.

After subtracting the price of the offer from its forecasted market value, the offers are ranked according to their net economic value. As an example, a geothermal resource may have a lower relative net energy value than a solar resource, but it can score higher in VCE's bid evaluation by providing higher RA capacity than solar. If a resource is located closer to load pockets, this could help it surpass other resources in the ranking process.

### **Best Fit with Portfolio**

Proposals are also evaluated by VCE based on how they contribute to the objectives of the portfolio. This involves reviewing each offer's effect on the net position of procurement targets for RPS, energy hedges, capacity, and GHG emissions. Resources that help the net position in the most categories in a timely manner are ranked higher by VCE than those that adversely affect the net position or contribute in fewer categories. For example, a typical solar project may add value to RPS targets, but may be detrimental to the net energy position and provide little value in terms of resource adequacy, whereas a baseload geothermal unit may score higher on net energy position



and capacity but possibly lower on GHG emissions. Projects that have online dates that are more in line with VCE's portfolio timing requirements are ranked higher.

Consistent with Pub. Util. Code §399.13(a)(9), VCE considers the best-fit attributes of various resource types to ensure a diversified and balanced resource mix to help support overall grid reliability. An offer's ranking is affected by what is already in VCE's portfolio and the potential combined net effects of other offers. In general, VCE's goal is to acquire resources with generation that best fit its load profile for the various seasons while complementing its overall net positions. VCE believes the more aligned its supply is with its load, the more VCE minimizes exposure to market prices. This strategy also minimizes VCE's potential contribution to the grid's supply and demand imbalance issues and supports reliability of the electrical grid. Typical average load profiles are developed for each season. The offered resources are stacked against existing positions along with other offers for potential combinations that optimize conformance with the load profile.

Other considerations include the size, volume, term length and contract terms of each bid. VCE's objective is to build a portfolio that is diversified. Offers with term lengths that are different from those in the portfolio or other offers have relatively higher value for VCE. Offers that do not require VCE to over-commit to any one resource as part of its portfolio have higher value. The location and technology type diversity that a resource provides relative to the supply stack is also factored in, particularly as this impacts factors such as overall grid reliability.

### **Project Maturity and Development Risks**

VCE evaluates offers based on the likelihood of project completion and delivery. This is based on factors such as:

1. Interconnection Status;
2. Site Control;
3. Permitting;
4. Financing;
5. Credit;
6. Experience;
7. Technology Complexity; and
8. Supply Chain.

Project maturity and viability are important to VCE's bid selection methodology because these factors increase the chance that projects will be completed and available for delivery when

expected. This is critical due to VCE's load/customer size and the resulting challenge of not being able to spread development risk among numerous projects. As such, projects that are further along in the development cycle and have more certainty of completion based on the factors above are ranked higher in VCE's current and future RFOs.

### **Project Location**

VCE's 2020 RFO gave preference to cost-effective renewable projects that provide local benefits, are located in environmentally suitable locations, minimize the impacts on species, habitats, landscapes, and agricultural lands and are to be developed in Yolo County or the adjacent six counties. One of the primary qualitative criteria for this RFO was the location of the project, including in pre-screened energy development areas. While Pub. Util. Code §399.13(a)(8) only applies to "electrical corporations," VCE will consider equity and impacts to economically and environmentally disadvantaged areas in future solicitations that encompass a larger footprint. This was not a significant criterion for the 2020 solicitation as there are no disadvantaged communities within VCE's jurisdiction.

### **XI. Safety Considerations (ACR § 5.11)**

VCE holds safety as a top priority and takes safety into consideration in all of its procurement decisions. The standard terms and conditions of its PPAs include safety-related provisions such as covenants regarding worker and job site safety precautions and compliance with prudent operating practices which include applicable laws, regulations and codes with respect to the operation, maintenance, repair and replacement of the facilities. The PPAs specifically call out the National Electric Safety Code and the National Electrical Code and would also require compliance with fire codes and other safety-related codes and regulations. The PPAs provide facility developers with the ability to reduce energy deliveries or disconnect and remove all or a portion of a facility in the interest of maintaining health and safety. Further, if a representative of VCE witnesses any testing of a facility, the PPAs require that the representative of VCE adhere to the safety and security procedures of the developer.

Although VCE does not own, operate, or control generation, distribution or transmission facilities, VCE does consider decommissioning in its resource procurement processes. VCE expects the facility developers to be responsible for all end of life disposal obligations relating to the facility. Specific plans for deconstruction or environmental remediation are generally criteria that lead

agencies establish for developers at the time of California Environmental Quality Act (“CEQA”) determination and criteria that are established by state and local authorities to obtain necessary permits. As part of local permitting processes, facility developers are required to plan for facility decommissioning via the Conditional Use Permit process administered by the governing County. VCE requires developers to adhere to all environmental requirements of their permits to construct and operate facilities under PPA with VCE.

Based on safety and other considerations, resources that are located closer to load areas, which reduce reliance on long distance, high voltage transmission lines, are given higher priority in VCE’s procurement selection process. Higher value will be applied to other non-traditional resources such as distributed energy resources (“DERs”) and aggregated demand response that alleviate transmission network upgrades. Resources with these characteristics reduce wildfire risks and Public Safety Power Shutoff events associated with transmission lines. Overall, VCE’s commitment to procuring GHG-free power helps to reduce the risks of wildfires exacerbated by climate change.

VCE is willing to consider, but has not specifically sought, biomass resources in its current and past solicitations. VCE has never had biomass resources under contract, thus the relevant SB 901 requirements do not apply to VCE. VCE is not excluding biomass resources and will consider them if they are suitable to the portfolio and provide high value to VCE customers. Such resources will be evaluated along with other resources based on the principles discussed in the previous sections of this Plan pertaining to portfolio optimization/diversity/reliability, bid selection protocol, LCBF and safety. Developers or facilities bid into VCE solicitations that do not meet safety requirements are not considered for ranking.

## **XII. Consideration of Price Adjustments - § 399.13(a)(5)(E) (ACR § 5.12)**

VCE does not exclude price adjustment mechanisms in its solicitations for RPS resources. Based on its review of proposals with price adjustment mechanisms received, however, the cost premiums associated with such mechanisms outweighed the reduction in risk to VCE and its customers. As suppliers get more sophisticated or gain access to new risk management tools, this may change in the future. VCE will continue to examine proposals based on the overall value to its customers and its ability to remove risk from the supply portfolio at a reasonable cost.

Some of the mechanisms VCE considered for contracts include annual price escalators, trading hub indexed prices, hub or load-settled pricing in lieu of nodal pricing. Annual price escalators allow for lower payments in the earlier years and higher payments in later years. The rate of return and interest rate assumptions built into the escalation factors of offers were too high for VCE to consider. It is clear that both suppliers and customers prefer price certainty. Based on this, escalated price structures were less favorable to VCE's customers. Furthermore, VCE feels more comfortable with financial projections in the near term than it does in the long term. Uncertainty in fluctuations around the PCIA also complicate evaluations.

VCE also considered index pricing where the buyer pays a fixed premium on top of the spot market energy clearing price for contracted energy. This structure allocates the energy price risk back to the seller. VCE found these deals to be less favorable for its customers as the REC premiums were priced too high for the level of risk reduction provided to the portfolio. This reflects the price certainty that project developers and their financiers prefer.

VCE also considered hub or load settled structures. Under this structure, the contractual delivery point would be at the trading hub such as NP15 or the DLAP. This would shift the cost of congestion and transmission losses to the seller. VCE found these premiums also to be too high in its received offers. This is reflective of the fact that suppliers have less access to congestion management instruments such as congestion revenue rights ("CRR") than do load-serving entities.

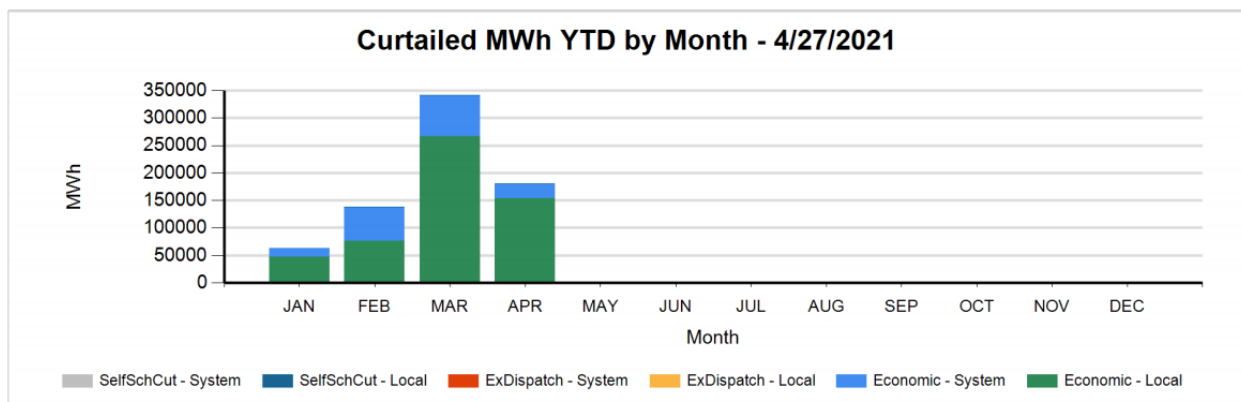
At this point, VCE has not incorporated any price adjustment mechanisms to its RPS resources, but is open to reviewing and incorporating them if it makes sense to VCE's customers. Ultimately for this to occur, the supplier must be in a better position to manage the applicable risk than the retail seller.

### **XIII. Curtailment Frequency, Forecasting, and Costs - § 399.13(a)(5)(B) and 399.15(b)(5) (ACR § 5.13)**

Because VCE does not yet have online resources under its control, it does not have much to report on direct experience with curtailments. VCE has given much thought to curtailment as it pertains to the planning of its power resource portfolio, however. This requires the examination of general trends in the energy markets and characteristics of different resources.

1. **Factors having the most impact on the projected increases in incidences of overgeneration and negative market price hours.** Many factors can contribute to curtailment conditions. The obvious one is high concentration of non-dispatchable resources such as solar and wind. The near-zero variable or marginal costs of these resources combined with other plants that have must-run requirements during periods of lower load create an imbalance between supply and demand. Due to the geographic benefits for certain generation types to be in areas with preferred characteristics for development, these units tend to be built in clusters that compete for the same transmission resources. The congestion issues caused by this competition leads to negative pricing and thus curtailments. As evidenced by data from the CAISO, curtailments are largely from economic bids based on local congestion constraints. During Spring run-off months, large hydro generation also exacerbates the issue as shown by the system-wide oversupply economic curtailments. See Figure 3 below.

**Figure 3. CAISO Monthly Curtailment by Category**



Source: [http://www.caiso.com/Documents/Wind\\_SolarReal-TimeDispatchCurtailmentReportApr27\\_2021.pdf](http://www.caiso.com/Documents/Wind_SolarReal-TimeDispatchCurtailmentReportApr27_2021.pdf)

2. **Written description of quantitative analysis of forecast of the number of hours per year of negative market pricing for the next 10 years.** VCE has not performed an in-depth analysis to predict the number hours per year of negative market pricing events for the next 10 years. This type of analysis is beyond the expertise of VCE and is more suitable for specialized consulting firms. VCE's analytical approach is to rely on studies from sources such as CAISO and NREL. For its own internal assumptions, VCE uses a combination of historical data and general projection of the overall trends of energy markets and investment in resources. For resources under consideration for VCE's power

supply, studies are completed based on historical negative pricing events at the respective nodal level along with observations of development activity in the same area.

3. **Experience, to date, with managing exposure to negative market prices and or lessons learned from other retail sellers in California.** VCE does not have direct experience with curtailments as it does not yet have any online resources under long-term contract. VCE's existing RPS contracts are for guaranteed delivery. Lessons learned from other retail sellers include not over-committing or concentrating in one resource, accounting for curtailments in RPS compliance planning, and including contract provisions to reduce risk, overprocurement and other mitigation measures described in Sections 6 and 7 above.
4. **Direct costs incurred, to date, for incidences of overgeneration and associated negative market prices.** VCE has no direct costs incurred for overgeneration and associated negative market prices. All of its contracts to date have been for guaranteed delivery.
5. **Overall strategy for managing the overall cost impact of increasing incidences of overgeneration and negative market prices.** VCE's approach to manage the overall costs associated with curtailments is applied at different levels. On the demand side, VCE is investigating strategies to incentivize consumption behavior to better fit the profile of power supply. These may include modified rate structures, demand response programs, electric vehicle adoption, and building electrification. On the supply side, VCE intends to build a power supply portfolio with resources of different generation profiles that fit optimally with its load profile. VCE also incorporates appropriate curtailment clauses in its contracting of resources to manage the impact of these events. VCE is investing in battery storage as a dispatchable and faster-responding supply resource in its portfolio.

Another consideration VCE applies when evaluating supply resources is the location. VCE places more value on projects located in less congested areas and in areas closer to load. This minimizes the exposure to potential congestion and price basis risk.

On the policy front, VCE believes promoting improved coordination on the power grid and the proper implementation of market regionalization can help alleviate some of the impact of curtailment.

#### **XIV. Cost Quantification (ACR § 5.14)**

As required by the ACR, VCE’s Cost Quantification template has been completed to reflect actual direct expenditures by year for 2018-2020 and forecast direct expenditures for 2021-2030. There are no contracts that currently require the approval of the Commission or VCE Board of Directors.

#### **XV. Coordination with the IRP Proceeding (ACR § 5.15)**

VCE’s 2020 IRP, submitted on September 1, 2020, was adopted by VCE’s Board on August 13, 2020, and certified by the Commission at its February 10, 2022 meeting. Table 8 (based on Table 3 in the ACR) below describes VCE’s final IRP.

**Table 810: Alignment of RPS and IRP Planning**

<b>IRP Report Section</b>	<b>RPS Alignment in IRPs</b>
III. Study Results A. Conforming and Alternative Portfolios	<p>VCE filed two IRP portfolios: One that conforms with the 46MMT scenario and one that conforms with the 38 MMT scenario (“Conforming Portfolios”). For VCE, these portfolios target GHG emissions of 156,000 tons and 129,000 tons per year, respectively, by 2030. Planned and already contracted RPS resources described in other sections of this Plan are generally included in the IRP; however, the most recent three PPAs were not signed at the time the IRP was submitted. Therefore, expected procurement results were included instead. These planned and contracted resources constitute the bulk of VCE’s Conforming Portfolios based on the IRP Reference System Plan for the 2021-2025 period, including:</p> <p><u>Existing Resources (and Existing Planned)</u>  Indian Valley Hydro, 2.9 MW (Contract ID VCEA40001). This small hydroelectric resource is currently under a 5-year contract with VCE. VCE plans to continue using this resource beyond those five years if cost-effective and proven to perform as contracted. It is included as a resource for all years in the IRP.</p> <p><u>New RPS Resources (at the time of IRP submittal)</u>  VCE’s resource plan expects to rely on a mix of renewable and non-carbon resources such as solar PV, wind, hydro and battery storage. In the first half of 2020, VCE completed long-term solar PPAs for a total of 122 MW with expected online dates in Q4 of 2021:</p> <ul style="list-style-type: none"> <li>- Aquamarine Solar (Contract ID VCEA50002), 50 MW.</li> <li>- Rugged Solar (Contract ID VCEA50003), 72 MW.</li> </ul> <p>Although the Rugged PPA was terminated prior to IRP submittal, a replacement project placeholder for 75 MW PV, coming online in 2022 was included. In 2021, VCE signed the PPA for Resurgence Solar (90 MW PV + 75 MW storage) to replace the Rugged PPA. The larger size</p>

	<p>of the Resurgence Solar project reduces the capacity VCE must seek in future solicitations to achieve the Conforming Portfolio requirements.</p> <p>VCE issued an RFO for new local renewable resources in April 2020 and completed contracting for resources by the end of 2020 with expected online dates no later than the end of 2023. The IRP includes 25 MW of new local solar, whereas the actual results included 23 MW of new local solar, with 9.5 MW of integrated battery storage. Together with the already-signed contracts discussed above, this additional renewable capacity ensures that VCE meets most of its 2021-2024 RPS Compliance Period 4 mandates, with the balance coming from short-term RPS contracts. The exact capacity and resource types chosen from this RFO were not known at the time of IRP submittal.</p> <p>The small hydro and solar PV resource contracts described above will meet nearly all of VCE’s incremental energy resource needs in the 2021-2024 Compliance Period. VCE has also procured 7 MW of capacity from demand response, coming online before August 1, 2021, to ensure that it meets its first portion of the CPUC-mandated resource adequacy procurement requirement, in compliance with D.19-11-016. This, together with the planned renewable energy procurement, will ensure that VCE meets its procurement obligations under R.16-02-007.</p> <p>The activities described above will cover both the 46 MMT Conforming Portfolio and the 38 MMT Conforming Portfolio. In fact, VCE expects that procurement activities and action plans will remain the same regardless of portfolio, but the amount of resources procured or contracted will differ. As explained further below, the 38 MMT portfolio is expected to require additional incremental procurement and/or contracting of wind, solar, storage and large scale hydro to ensure that emissions in the 38 MMT portfolio reaches the required 129,000 tons per year by 2030.</p> <p>Together with ten other CCAs, VCE issued an RFI regarding storage options with a capacity to store energy for at least 8 hours. Although the RFI did not result in any agreements, it did inform the CCAs that economies of scale and risk diversification are essential for (1) large scale projects and (2) emerging technology projects. As a result, numerous CCAs formed a Joint Powers Authority (JPA) focused on the acquisition of energy, capacity, storage or other energy products on a scale that the individual members most likely would not be able to achieve on their own. The California Community Choice Power “CC Power” JPA includes VCE, CleanPowerSF, SVCE, 3CE, MCE, EBCE, PCE, SCP, San Jose Clean Energy, Redwood Coast Energy Authority. <del>Through this membership, VCE will continue to monitor the development and cost-effectiveness of long-duration storage resources.</del> Through this membership, VCE joined the Joint CCA 2020 Request for</p>
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	<p><u>Offers for Long Duration Energy Storage Capacity, issued on October 15, 2020. The solicitation process resulted in the selection of the Tumbleweed Energy Storage project, a 69 MW/552 MWh 8-hour duration lithium-ion battery project. The project is expected to come online in 2026. VCE’s share is 2.86 MW / 22.88 MWh, which will fulfill part of its long-duration storage obligation. A second project, which will fulfill VCE’s remaining obligation, was selected through the same RFO process. Contract negotiations are ongoing, with execution targeted in 2Q 2022. VCE is also participating in the 2021 Request for Offer for Firm Clean Energy Resources, released on October 25, 2021. CC Power is shortlisting projects in February and is targeting contract execution in the second half of 2022.</u></p> <p>VCE’s planned efforts to secure additional capacity to ensure that RPS goals are met in the 2025-2030 period are discussed below. Finally, VCE will supply any minor gaps in RPS-eligible supply to reach its Conforming Portfolios through the use of short-term REC contracts.</p>
<p>IV. Action Plan A. Proposed Activities</p>	<p>Both of VCE’s preliminary IRP Conforming Portfolios rely on a combination of RPS-eligible solar PV, wind and battery storage. Unspecified market purchases and market-available RA is expected to provide the balance of resource needs.</p> <p>As part of its action plan and its continuous operations, VCE will monitor closely the progress of construction and key milestones for its contracted new capacity that will come online between 2021 and 2023.</p> <p>In order to secure sufficient long-term RPS eligible resources in its 46 MMT Conforming Portfolio in the 2025-2030 period, VCE plans to conduct solicitations for new capacity in the 2023-2024 period covering needs in 2025-2027, and likely also a solicitation in 2025 or 2026 to cover needs for renewable energy and storage in the 2028-2030 period.</p> <p>VCE expects all of this additional capacity to be RPS-eligible renewable energy, currently estimated to be a total of 30-40 MW constituting new northern California wind and/or northern California solar resources – identified in the IRP models (RESOLVE) as Sacramento River Solar and Solano Wind. The timing and extent of this procurement activity will depend on the successful completion of VCE’s in-development projects, as well as VCE’s electric demand growth over the next few years. VCE does not expect any procurement barriers to impede its future contracting for new renewable energy resources, but notes that even though a balanced RPS portfolio is desirable, the limited resource availability and lead time required for some resources, such as wind and biofuels-based generation, may lead to a “solar-heavy” RPS and IRP portfolio.</p> <p>For the 38 MMT Conforming Portfolio, the resource mix is expected to</p>

	<p>be very similar to the 46 MMT Conforming Portfolio. VCE also expects that the same solicitation schedule could be used for the 38 MMT portfolio, with the difference that VCE expects to need additional resources to ensure that VCE's emissions conform with the requirements for the 38 MMT portfolio. This is likely to include about 10 MW of additional wind resources, 2-5 MW of additional solar resources, additional battery capacity and 10-15 MW of additional carbon-free, large-scale hydro resources.</p>
<p>III. Action Plan  B. Procurement Activities</p>	<p>As highlighted above in this table, VCE completed procurement activities in 2020 and early 2021, including having entered into four PPAs for new solar capacity, three with integrated 4-hour battery storage, to come online between 2021 and 2023.</p> <p>For the 46 MMT Conforming Portfolio, the exact timing of additional procurement activities to secure RPS and IRP capacity in the 2025-2030 period will depend on load growth and successful completion of VCE's in-development projects. For the 38 MMT portfolio, similarly, there is uncertainty, and the main difference between the portfolios is the amount of wind, solar, battery, and hydro resources that will be needed, as discussed above.</p> <p>For new resources and for both of the Conforming Portfolios, VCE expects to continue using an open and competitive procurement process using RFOs. VCE's goals include building its resource supply on local renewable capacity to the extent such capacity is available and cost-effective. VCE expects to continue this policy in the future for its long term resource plans as well as for its RPS procurement.</p> <p>After completing its 2020 procurement activities, described above in this table as well as in other sections of this Plan, VCE expects to need to add additional resources by 2026 or 2027. The IRP action plan calls for an RFO to be initiated in the 2023-2024 period to facilitate the addition of new renewable capacity in the 2026-2027 period and an additional RFO in 2025 or 2026 to cover resource needs in the 2028-2030 period. This preliminary schedule is expected to be the same for both of the Conforming Portfolios, with the difference that more resources will need to be procured if VCE is mandated to conform to the 38 MMT Conforming Portfolio, as discussed above.</p> <p>All new resources under both of the Conforming Portfolios are planned to be RPS-eligible, and VCE has a preference for further diversifying its portfolio with wind and/or biofuels based resources if those resources are available and are competitively priced. As the cost of battery storage is expected to continue to decline, VCE also expects to continue to gradually increase its use of batteries to meet its resource adequacy goals and to enhance the use of solar energy to extend beyond daylight hours. In fact, VCE sees increased use of batteries as one</p>

	<p>component of its compliance strategy under the 38 MMT Conforming Portfolio whereby using batteries to improve its integration of renewables will also help to support compliance with the 38 MMT Conforming Portfolio goal of 129,000 tons of GHGs per year by 2030.</p>
<p>III. Action Plan</p> <p>C. Potential Barriers</p>	<p>VCE does not expect any procurement barriers to impede its future contracting for new renewable energy resources, but notes that even though a balanced, diverse RPS portfolio is desirable, the limited resource availability and lead time required for some resources, such as wind and biofuels-based generation, may lead to a “solar-heavy” RPS and IRP portfolio. The key risk affecting both VCE’s RPS portfolio and IRP portfolios is reliance on new resources that have yet to prove that they can succeed in completing construction within the timelines contracted and that once completed, they will deliver the contracted volume of energy and capacity.</p> <p>VCE’s Conforming Portfolios consist of a combination of solar PV, wind, hydro, demand response, and battery storage. Even though battery storage is quickly moving to the mainstream in terms of resource choice for capacity in California, this technology remains largely unproven in large scale and long term applications as is foreseen in California. Storage performance may therefore become both a risk and barrier if actual performance falls short of expectations. This barrier is something all LSEs in California have in common.</p> <p>Risks and barriers are more likely to be encountered for resources supporting intermittent RPS-eligible capacity, such as short- and long-term storage and demand response.</p> <p>For two reasons, VCE does not see any risks in its portfolio due to retirements of existing renewable energy sources. First, the only existing renewable energy resource under contract is the Indian Valley small scale hydro plant that provides 6,450 MWh of energy each year, which can relatively easily be replaced by other resources or market purchases. Second, over the next 3-5 years, VCE expects to eliminate its need for procurement of market RECs from existing resources and will instead contract directly for new resources under the long term contracts described in other parts of this report. Compliance with the RPS will therefore not depend on retaining existing resources, but will instead rely on the long term performance of newly-built renewable resources.</p>

Respectfully submitted,

/s/ Sheridan Pauker

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*Counsel to Valley Clean Energy Alliance*

| Dated: ~~July 1, 2021~~ February 17, 2022

### Officer Verification

I am an officer of the reporting organization herein and am authorized to make this verification on its behalf. The statements in the foregoing document are true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters, I believe them to be true. The spreadsheet templates used within this filing have not been altered from the version issued or approved by Energy Division.

Executed on ~~July 1, 2021~~February 17, 2022, at Davis, California.



Mitch Sears  
Interim General Manager  
Valley Clean Energy Alliance  
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**2021 RPS Procurement Plan Checklist - Task Completed**

Retail seller name: Valley Clean Energy	YES/ NO	NOTES
I. Major Changes to RPS Plan	Yes	
II. Executive Summary	Yes	
III. Summary of Legislation Compliance	Yes	
IV. Assessment of RPS Portfolio Supplies and Demand	Yes	
IV.A. Portfolio Supply and Demand	Yes	
IV.A.1. Portfolio Optimization	Yes	
IV.B. Responsiveness to Local and Regional Policies	Yes	
IV.B.1 Long-term Procurement	Yes	
IV.C. Portfolio Diversity and Reliability	Yes	
IV.D. Lessons Learned	Yes	
V. Project Development Status Update	Yes	
VI. Potential Compliance Delays	Yes	
VII. Risk Assessment	Yes	
VIII. Renewable Net Short Calculation	Yes	
IX. Minimum Margin of Procurement (MmoP)	Yes	
IX.A. MmoP Methodology and Inputs	Yes	
IX.B. MmoP Scenarios	Yes	
X. Bid Solicitation Protocol	Yes	
X.A. Solicitation Protocols for Renewables Sales	Yes	
X.B. Bid Selection Protocols	Yes	
X.C. LCBF Criteria	Yes	
XI. Safety Considerations	Yes	
XII. Consideration of Price Adjustments Mechanisms	Yes	
XIII. Curtailment Frequency, Forecasting, Costs	Yes	
XIV. Cost Quantification	Yes	
XV. Coordination with the IRP Proceeding	Yes	
Appendix A: Redlined Version of the <del>Draft</del> <u>Final</u> 2021 RPS Plan	Yes	

## **Appendix B**

### **Quantitative Assessment**

Variable	Calculation	Item	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2017-2020	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2021-2024
		Forecast Year					CP 3	1	2	3	4	CP 4
Annual RPS Requirement												
A		Total Retail Sales (MWh)		394,935	641,646	704,453	1,741,034	762,340	728,826	736,309	748,304	2,975,779
B		RPS Procurement Quantity Requirement (%)	27.0%	29.0%	31.0%	33.0%	31.4%	35.8%	38.5%	41.3%	44.0%	39.9%
C	A*B	Gross RPS Procurement Quantity Requirement (MWh)	-	114,531	198,910	232,469	545,910.9	272,537	280,598	303,728	329,254	1,186,115.9
D		Voluntary Margin of Over-procurement (MWh)		74,130	91,943	76,530	242,602	(172,479)	(140,554)	106,029	291,464	84,460
E	C+D	Net RPS Procurement Need (MWh)	-	188,661	290,853	308,999	788,513	100,057	140,044	409,756	620,718	1,270,576
RPS-Eligible Procurement												
Fa		Risk-Adjusted RECs from Online Generation (MWh)		188,661	290,853	308,999	788,513	99,629	138,439	136,439	136,060	510,566
Faa		Forecast Failure Rate for Online Generation (%)					#DIV/0!	0.0%	0.0%	0.0%	0.0%	0.0%
Fb		Risk-Adjusted RECs from RPS Facilities in Development (MWh)					-		3,786	283,897	289,918	577,601
Fbb		Forecast Failure Rate for RPS Facilities in Development (%)					#DIV/0!	0.1%	0.1%	7.5%	7.8%	3.8%
Fc		Pre-Approved Generic RECs (MWh)					-					-
Fd		Executed REC Sales (MWh)					-					-
F	Fa+Fb+Fc-Fd	Total RPS Eligible Procurement (MWh)	-	188,661	290,853	308,999	788,513	99,629	142,225	420,336	425,977	1,088,167
F0		Category 0 RECs					-					-
F1		Category 1 RECs		102,897	184,512	207,418	494,827	99,629	142,225	420,336	425,977	1,088,167
F2		Category 2 RECs		85,764	106,341	101,581	293,686					-
F3		Category 3 RECs					-					-
Gross RPS Position (Physical Net Short)												
Ga	F-E	Annual Gross RPS Position (MWh)	-	-	-	-	-	(428)	2,181	10,580	(194,741)	(182,408)
Gb	F/ A	Annual Gross RPS Position (%)	0%	48%	45%	44%	45%	13%	20%	57%	57%	37%
Application of Bank												
Ha	J-Hc (from previous CP)	Existing Banked RECs above the PQR					-	-				-
Hb		RECs above the PQR added to Bank					-					-
Hc		Non-bankable RECs above the PQR					-					-
H	Ha+Hb	Gross Balance of RECs above the PQR	-	-	-	-	-	-	-	-	-	-
Ia		Planned Application of RECs above the PQR towards RPS Compliance					-					-
Ib		Planned Sales of RECs above the PQR					-					-
J	H-Ia-Ib	Net Balance of RECs above the PQR	-	-	-	-	-	-	-	-	-	-
J0		Category 0 RECs					-					-
J1		Category 1 RECs					-					-
J2		Category 2 RECs					-					-
Expiring Contracts												
K		RECs from Expiring RPS Contracts (MWh)		187,744	282,909	299,381	770,034	60,000				60,000
Net RPS Position (Optimized Net Short)												
La	Ga+Ia-Ib-Hc	Annual Net RPS Position after Bank Optimization (MWh)	-	-	-	-	-	(428)	2,181	10,580	(194,741)	(182,408)
Lb	(F+Ia-Ib-Hc)/ A	Annual Net RPS Position after Bank Optimization (%)	#DIV / 0!	0.477701394	0.453292002	0.438636786	0.452899254	0.130688407	0.195142675	0.570868435	0.569256975	0.365674688



Variable	Calculation	Item	2025 Forecast	2026 Forecast	2027 Forecast	2025-2027	2028 Forecast	2029 Forecast	2030 Forecast	2028-2030
		Forecast Year	5	6	7	CP 5	8	9	10	CP 6
Annual RPS Requirement										
A		Total Retail Sales (MWh)	757,297	768,492	779,306	2,305,095	792,292	801,227	812,366	2,405,885
B		RPS Procurement Quantity Requirement (%)	46.7%	49.3%	52.0%	49.4%	54.7%	57.3%	60.0%	57.4%
C	A*B	Gross RPS Procurement Quantity Requirement (MWh)	353,430	379,097	405,239	1,137,766.5	433,146	459,343	487,420	1,379,909.0
D		Voluntary Margin of Over-procurement (MWh)	17,672	18,955	20,262	56,888	21,657	22,967	24,371	68,995
E	C+D	Net RPS Procurement Need (MWh)	371,102	398,052	425,501	1,194,655	454,803	482,310	511,791	1,448,904
RPS-Eligible Procurement										
Fa		Risk-Adjusted RECs from Online Generation (MWh)	129,622	126,711	124,751	381,085	123,066	120,872	118,953	362,891
Faa		Forecast Failure Rate for Online Generation (%)	0.0%			0.0%				#DIV/0!
Fb		Risk-Adjusted RECs from RPS Facilities in Development (MWh)	287,687	286,233	284,779	858,699	284,085	281,871	280,416	846,372
Fbb		Forecast Failure Rate for RPS Facilities in Development (%)	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%
Fc		Pre-Approved Generic RECs (MWh)				-				-
Fd		Executed REC Sales (MWh)				-				-
F	Fa+Fb+Fc-Fd	Total RPS Eligible Procurement (MWh)	417,310	412,944	409,530	1,239,784	407,151	402,743	399,370	1,209,264
F0		Category 0 RECs				-				-
F1		Category 1 RECs	417,310	412,944	409,530	1,239,784	407,151	402,743	399,370	1,209,264
F2		Category 2 RECs				-				-
F3		Category 3 RECs				-				-
Gross RPS Position (Physical Net Short)										
Ga	F-E	Annual Gross RPS Position (MWh)	46,208	14,892	(15,971)	45,129	(47,652)	(79,567)	(112,421)	(239,641)
Gb	F/ A	Annual Gross RPS Position (%)	55%	54%	53%	53.8%	51%	50%	49%	50%
Application of Bank										
Ha	J-Hc (from previous CP)	Existing Banked RECs above the PQR	-			-	-			-
Hb		RECs above the PQR added to Bank				-				-
Hc		Non-bankable RECs above the PQR				-				-
H	Ha+Hb	Gross Balance of RECs above the PQR	-	-	-	-	-	-	-	-
Ia		Planned Application of RECs above the PQR towards RPS Compliance				-				-
Ib		Planned Sales of RECs above the PQR				-				-
J	H-Ia-Ib	Net Balance of RECs above the PQR	-	-	-	-	-	-	-	-
J0		Category 0 RECs				-				-
J1		Category 1 RECs				-				-
J2		Category 2 RECs				-				-
Expiring Contracts										
K		RECs from Expiring RPS Contracts (MWh)	129,622			129,622				-
Net RPS Position (Optimized Net Short)										
La	Ga+Ia-Ib-Hc	Annual Net RPS Position after Bank Optimization (MWh)	46,208	14,892	(15,971)	45,129	(47,652)	(79,567)	(112,421)	(239,641)
Lb	(F+Ia-Ib-Hc)/ A	Annual Net RPS Position after Bank Optimization (%)	0.551051829	0.537343481	0.525506546	0.537845281	0.513889962	0.502658034	0.491612815	0.502627362

## **Appendix C**

### **Cost Quantification Template**

<b>Table 1: Cost Quantification (Actual Net Costs, \$)</b>		<b>Actual RPS-Eligible Procurement and Generation Net Costs (\$)</b>		
1	<b>Executed RPS-Eligible Contracts by Technology Type* (Purchases and Sales)</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
2	Biogas: Digester Gas			
3	Biogas: Landfill Gas			
4	Biodiesel			
5	Biomass			
6	Muni Solid Waste			
7	Geothermal		\$30,937	
8	Small Hydro (Non-UOG)	\$54,887	\$415,135	\$456,377
9	Conduit Hydro			
10	Water Supply / Conveyance			
11	Ocean Wave			
12	Ocean Thermal			
13	Tidal Current			
14	Solar PV (Non-UOG)		\$1,606,799	
15	Solar Thermal			
16	Wind	\$2,223,589	\$1,838,193	
17	Unbundled RECs (REC Only)			
18	Various (Index Plus REC)***			\$4,146,630
19	Fuel Cell			
20	UOG: Small Hydro			
21	UOG: Solar PV			
22	UOG: Other			
23	Executed REC Sales (Revenue)			
24	<b>Total RPS-Eligible Procurement and Generation Net Cost</b>	<b>\$2,278,476</b>	<b>\$3,891,063</b>	<b>\$4,603,007</b>
25	Total Retail Sales (MWh)	394,935	641,646	704,453
26	<b>Incremental Rate Impact</b>	<b>0.576924304</b>	<b>0.606418976</b>	<b>0.653415828</b>

\*Note: Technology definitions are given in the PCC Classification Handbook located in the RPS Compliance Reporting section of:  
<https://www.cpuc.ca.gov/RPSComplianceReporting/>

Table 2: Cost Quantification (Forecast Costs and Revenues, \$)		Forecast RPS-Eligible Procurement Costs and Revenues (\$)									
1	Executed But Not Approved RPS-Eligible Contracts (Purchases and Sales)**	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2	Biogas Digester Gas										
3	Biogas Landfill Gas										
4	Biodiesel										
5	Biomass										
6	Muni Solid Waste										
7	Geothermal										
8	Small Hydro (Non-UOG)										
9	Conduit Hydro										
10	Water Supply / Conveyance										
11	Ocean Wave										
12	Ocean Thermal										
13	Tidal Current										
14	Solar PV (Non-UOG)										
15	Solar Thermal										
16	Wind										
17	Unbundled RECs (REC Only)										
18	Various (Index Plus REC)***										
20	Fuel Cell										
21	UOG Small Hydro										
22	UOG Solar PV										
23	UOG Other										
24	Executed REC Sales (Revenue)										
25	Total Executed But Not Approved RPS-Eligible Procurement and Generation Cost	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	Total Retail Sales (MWh)	762 340	728 826	736 309	748 304	757 297	768 492	779 306	792 292	801 227	812 366
27	Incremental Rate Impact	0	0.00 ¢/kWh	0.00 ¢/kWh	0.00 ¢/kWh	0.00 ¢/kWh	0.00 ¢/kWh	0.00 ¢/kWh	0.00 ¢/kWh	0.00 ¢/kWh	0.00 ¢/kWh
28	Executed RPS-Eligible Contracts (Purchases and Sales)****	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
29	Biogas Digester Gas										
30	Biogas Landfill Gas										
31	Biodiesel										
32	Biomass										
33	Muni Solid Waste										
34	Geothermal										
35	Small Hydro (Non-UOG)										
36	Conduit Hydro										
37	Water Supply / Conveyance										
38	Ocean Wave										
39	Ocean Thermal										
40	Tidal Current										
41	Solar PV (Non-UOG)										
42	Solar Thermal										
43	Wind										
44	Unbundled RECs (REC Only)										
45	Various (Index Plus REC)***										
47	Fuel Cell										
48	UOG Small Hydro										
49	UOG Solar PV										
50	UOG Other										
51	Executed REC Sales (Revenue)										
52	Total Executed and Approved RPS-Eligible Procurement and Generation Cost										
53	Total Retail Sales (MWh)	762 340	728 826	736 309	748 304	757 297	768 492	779 306	792 292	801 227	812 366
54	Incremental Rate Impact										
55	Total RPS-Eligible Procurement and Generation Cost										
56	Total Incremental Rate Impact										

\*\*Note For contracts that have been executed but still require formal approval (CPUC or other formal approval process) for purchases and sales

\*\*\*Note The "Various" technology type is to be used in the case of contracts encompassing multiple facilities where the generation type is not yet known

\*\*\*\*Note For OUs and SMJUs include all executed contracts that required CPUC approval For CCAs and ESPs include all executed contracts that have been approved through relevant formal approval processes

Table 3: Cost Quantification (Actual Procurement / Generation and Sales, MWh)		Actual RPS-Eligible Procurement / Generation and Sales (MWh)		
1	Technology Type* (Procurement / Generation and Sales)	2018	2019	2020
2	Biogas: Digester Gas			
3	Biogas: Landfill Gas			
4	Biodiesel			
5	Biomass			
6	Muni Solid Waste			
7	Geothermal		4,044	
8	Small Hydro (Non-UOG)	917	7,944	9,618
9	Conduit Hydro			
10	Water Supply / Conveyance			
11	Ocean Wave			
12	Ocean Thermal			
13	Tidal Current			
14	Solar PV (Non-UOG)		133,548	
15	Solar Thermal			
16	Wind	187,744	145,317	
17	Unbundled RECs (REC Only)			
18	Various (Index Plus REC)***			299,381
19	Fuel Cell			
20	UOG: Small Hydro			
21	UOG: Solar PV			
22	UOG: Other			
23	Executed REC Sales (MWh)			
24	Total RPS Eligible Procurement (MWh)	188,661	290,853	308,999

\*Note: Technology definitions are given in the PCC Classification Handbook located in the RPS Compliance Reporting section of:  
<https://www.cpuc.ca.gov/RPSComplianceReporting/>

Table 4: Cost Quantification (Forecast Procurement / Generation and Sales, MWh)		Forecast RPS-Eligible Procurement / Generation and Sales (MWh)									
1	Executed But Not Approved RPS-Eligible Contracts (Purchases and Sales) **	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2	Biogas: Digester Gas										
3	Biogas: Landfill Gas										
4	Biodiesel										
5	Biomass										
6	Muni Solid Waste										
7	Geothermal										
8	Small Hydro (Non-UOG)										
9	Conduit Hydro										
10	Water Supply / Conveyance										
11	Ocean Wave										
12	Ocean Thermal										
13	Tidal Current										
14	Solar PV (Non-UOG)										
15	Solar Thermal										
16	Wind										
17	Unbundled RECs (REC Only)										
18	Various (Index Plus REC)***										
20	Fuel Cell										
21	UOG: Small Hydro										
22	UOG: Solar PV										
23	UOG: Other										
24	Executed REC Sales (MWh)										
25	Total Executed But Not Approved RPS-Eligible Procurement	0	0	0	0	0	0	0	0	0	0
26	Executed and Approved RPS-Eligible Contracts (Purchases and Sales) ****	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
27	Biogas: Digester Gas										
28	Biogas: Landfill Gas										
29	Biodiesel										
30	Biomass										
31	Muni Solid Waste										
32	Geothermal										
33	Small Hydro (Non-UOG)	1,176	6,448	6,448	6,448	2,265					
34	Conduit Hydro										
35	Water Supply / Conveyance										
36	Ocean Wave										
37	Ocean Thermal										
38	Tidal Current										
39	Solar PV (Non-UOG)	38,453	135,777	413,888	419,529	415,045	412,944	409,530	407,151	402,743	399,370
40	Solar Thermal										
41	Wind										
42	Unbundled RECs (REC Only)										
43	Various (Index Plus REC)***	60,000									
45	Fuel Cell										
46	UOG: Small Hydro										
47	UOG: Solar PV										
48	UOG: Other										
49	Executed REC Sales (MWh)										
50	Total Executed and Approved RPS-Eligible Procurement	99,629	142,225	420,336	425,977	417,310	412,944	409,530	407,151	402,743	399,370
51	Total RPS Eligible Procurement (MWh)	99,629	142,225	420,336	425,977	417,310	412,944	409,530	407,151	402,743	399,370

\*\*Note: For contracts that have been executed but still require formal approval (CPUC or other formal approval process) for purchases and sales.  
\*\*\*Note: The "Various" technology type is to be used in the case of contracts encompassing multiple facilities where the generation type is not yet known  
\*\*\*\*Note: For IOUs and SMJUs: Include all executed contracts that required CPUC approval. For CCAs and ESPs: Include all executed contracts that have been approved through relevant formal approval processes.

## **Appendix D**

### **Project Development Status**

**Valley Clean Energy Alliance**  
**2021 Final RPS Procurement Plan**  
**Appendix D**

Reporting LSE Name	RPS Contract ID	Project Name	Technology Type	Project Development Phase	City	County	State	Zip Code	Latitude
Valley Clean Energy Alliance (VCEA)	VCEA50002	Aquamarine Solar	Solar PV - Ground Mount	Post-Construction	Stratford	Kings County	CA	93266	36.189283
Valley Clean Energy Alliance (VCEA)	VCEA50006	Resurgence Solar I	Solar PV - Ground Mount	Pre-Construction	Boron	San Bernardino	CA	93516	35.0131
Valley Clean Energy Alliance (VCEA)	VCEA50004	Gibson Solar	Solar PV - Ground Mount	Pre-Construction	Madison	Yolo	CA	95653	38.680812
Valley Clean Energy Alliance (VCEA)	VCEA50005	Putah Creek Solar	Solar PV - Ground Mount	Construction	Winters	Yolo	CA	95694	38.2717

Reporting LSE Name	RPS Contract ID	Project Name	Longitude	Contract Length (Years)	Contract Execution Date (mm/dd/yyyy)
Valley Clean Energy Alliance (VCEA)	VCEA50002	Aquamarine Solar	-119.905299	15	2/14/20
Valley Clean Energy Alliance (VCEA)	VCEA50006	Resurgence Solar I	-117.5487	20	1/21/21
Valley Clean Energy Alliance (VCEA)	VCEA50004	Gibson Solar	-121.986841	20	11/13/20
Valley Clean Energy Alliance (VCEA)	VCEA50005	Putah Creek Solar	-121.594358	20	11/13/20

Reporting LSE Name	RPS Contract ID	Project Name	Contract Start Date (mm/dd/yyyy)	Contract End Date (mm/dd/yyyy)	Contract Capacity
Valley Clean Energy Alliance (VCEA)	VCEA50002	Aquamarine Solar	9/22/21	9/20/36	50
Valley Clean Energy Alliance (VCEA)	VCEA50006	Resurgence Solar I	12/31/22	12/30/42	90
Valley Clean Energy Alliance (VCEA)	VCEA50004	Gibson Solar	3/31/23	3/30/43	20
Valley Clean Energy Alliance (VCEA)	VCEA50005	Putah Creek Solar	7/1/22	6/30/42	3

Reporting LSE Name	RPS Contract ID	Project Name	Expected Annual Generation	Total Contract Volume	Project Notes
Valley Clean Energy Alliance (VCEA)	VCEA50002	Aquamarine Solar	134,684	1,951,155	
Valley Clean Energy Alliance (VCEA)	VCEA50006	Resurgence Solar I	207,305	5,156,860	
Valley Clean Energy Alliance (VCEA)	VCEA50004	Gibson Solar	54,262	984,358	
Valley Clean Energy Alliance (VCEA)	VCEA50005	Putah Creek Solar	8,000	145,241	